

ŠKODA

Workshop Manual OCTAVIA II 2004 ➤

Gearbox 0A4

Edition 02.04

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List of Workshop Manual Repair Groups



Repair Group

00 - Technical data

30 - Clutch

34 - Control, housing

35 - Wheels, shafts

39 - Final drive, differential gear



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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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00 – Technical data

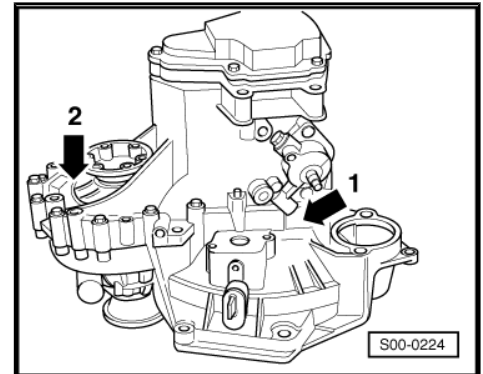
1 Identification of the gearbox

Assignment ⇒ [page 1](#).

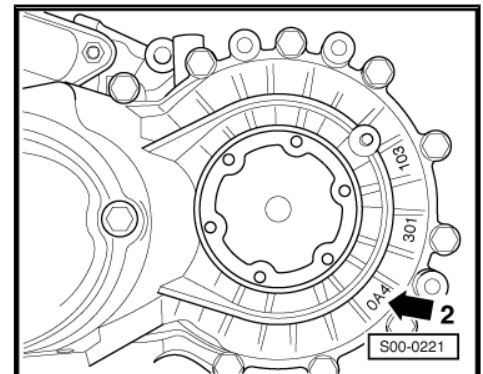
1.1 Location on the gearbox

Identification characters and production date -arrow 1-

Identification of gearbox 0A4 -arrow 2-



Identification of gearbox 0A4 -arrow 2-



Identification characters and production date of the gearbox

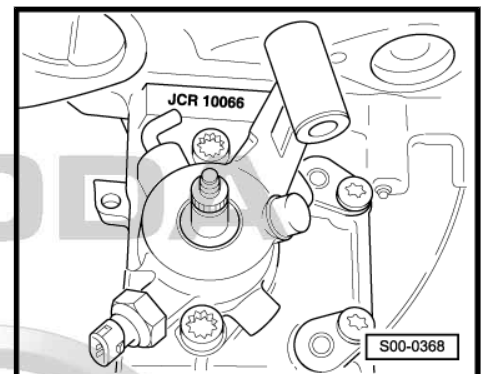
Example:	JCR	10	06	6
	Identification characters	Day	Month	Manufacturing year (2006)

Additional data gives information about the manufacturing factory.



Note

The gearbox identification characters also appear on the vehicle data stickers.



1.2 Identification characters, aggregate assignment, ratios, capacities

Manual gearbox	5 speed 0A4		
Identification characters	GQQ		JCR
Manufactured from through	02.04 05.06		06.06 12.10
Assignment Engine	1.9 / 77 kW TDI PD		
Ratio Final drive	61 : 18 = 3,389		
1st gear	34 : 09 = 3,778		



Manual gearbox		5 speed 0A4	
Identification characters		GQQ	JCR
	2nd gear	33 : 16 = 2,063	
	3rd gear	31 : 23 = 1,348	
	4th gear	29 : 30 = 0,967	
	5th gear	29 : 39 = 0,744	
	Reverse gear	18 : 09 x 36 : 20 = 3.600	
Capacity (disassemble the complete gearbox)		1.9 ltr.	
Changing capacity (partially disassemble the gearbox) ¹		1.7 ltr.	
Specification		⇒ Electronic Catalogue of Original Parts	
Clutch control		hydraulic	
Clutch plate Ø		⇒ Electronic Catalogue of Original Parts	
Drive shaft flange Ø		100 mm	

¹⁾ Gearbox housing and clutch housing were not separated.

Manual gearbox		5 speed 0A4	
Identification characters		LHW	KQM
Manufactured	from through	06.09	02.10
Assignment	Engine	1.6/77 kW TDI CR	2,0/81 kW TDI CR
Ratio	Final drive	62 : 17 = 3,777	61 : 18 = 3,389
	1st gear	34 : 09 = 3,778	34 : 09 = 3,778
	2nd gear	35 : 18 = 1,944	36 : 17 = 2,118
	3rd gear	32 : 27 = 1,185	33 : 26 = 1,269
	4th gear	31 : 38 = 0,815	32 : 37 = 0,865
	5th gear	30 : 48 = 0,625	31 : 47 = 0,660
Reverse gear		18 : 09 x 36 : 20 = 3.600	
Capacity (disassemble the complete gearbox)		1.9 ltr.	
Changing capacity (partially disassemble the gearbox) ¹		1.7 ltr.	
Specification		⇒ Electronic Catalogue of Original Parts	
Clutch control		hydraulic	
Clutch plate Ø		⇒ Electronic Catalogue of Original Parts	
Drive shaft flange Ø		100 mm	

¹⁾ Gearbox housing and clutch housing were not separated.

Manual gearbox		5 speed 0A4	
Identification characters		LUB	MDZ
Manufactured	from through	11.10	
Assignment	Engine	1.6/77 kW TDI CR	
Ratio	Final drive	62 : 17 = 3,777	61 : 18 = 3,389
	1st gear	34 : 09 = 3,778	
	2nd gear	35 : 18 = 1,944	

Manual gearbox	5 speed 0A4	
Identification characters	LUB	MDZ
3rd gear	32 : 27 = 1,185	
4th gear	31 : 38 = 0,815	
5th gear	30 : 48 = 0,625	
Reverse gear	18 : 09 x 36 : 20 = 3.600	
Capacity (disassemble the complete gearbox)	1.9 ltr.	
Changing capacity (partially disassemble the gearbox) ¹	1.7 ltr.	
Specification	⇒ Electronic Catalogue of Original Parts	
Clutch control	hydraulic	
Clutch plate Ø	⇒ Electronic Catalogue of Original Parts	
Drive shaft flange Ø	100 mm	

¹⁾ Gearbox housing and clutch housing were not separated.



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2 Overview of Transmission System

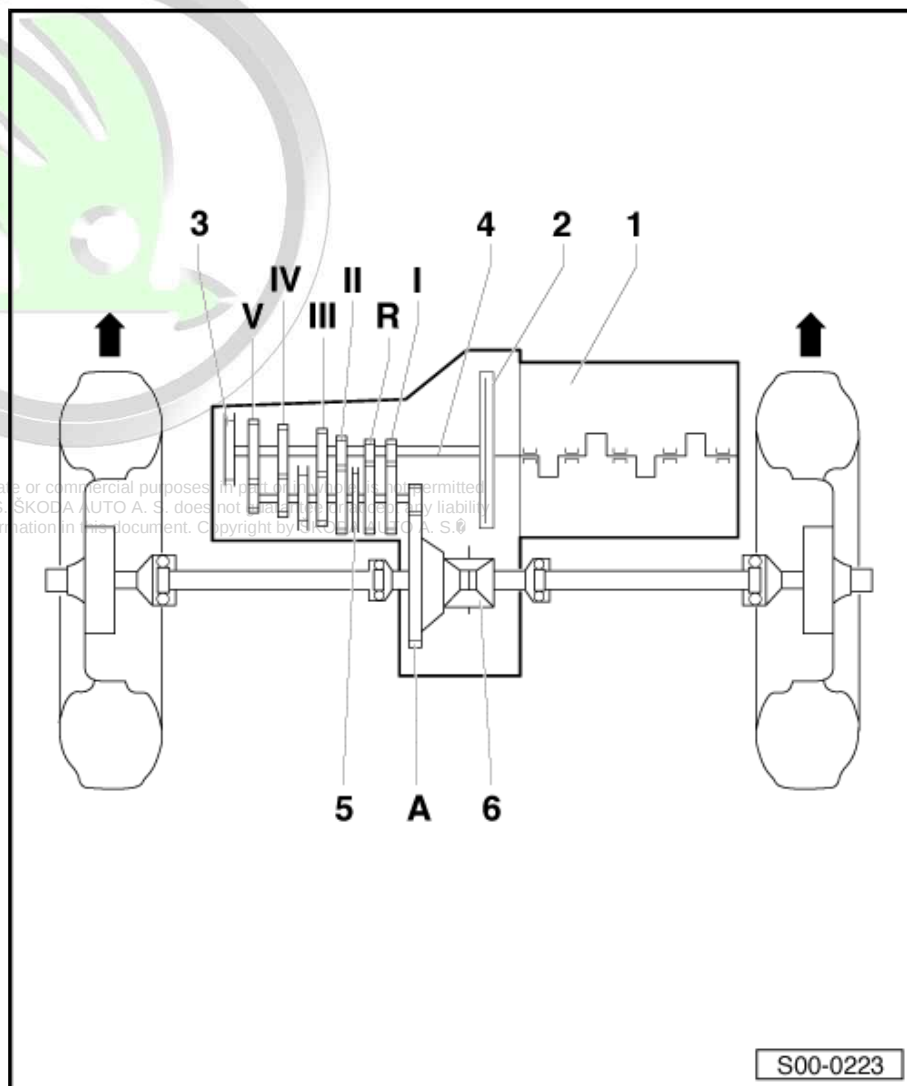
2.1 Designation of components and transmission ratio



Note

The arrow shows the direction of travel.

- 1 - Engine
- 2 - Clutch
- 3 - Manual gearbox
- 4 - Drive shaft
- 5 - Output shaft
- 6 - Differential gear
- I - 1st gear
- II - 2nd gear
- III - 3rd gear
- IV - 4th gear
- V - 5th gear
- R - Reverse gear
- A - Final drive



3 General repair information

Scrupulous care and cleanliness as well as the proper tools are essential requirements for carrying out proper and successful gearbox repairs. Obviously, the generally valid basic safety rules apply to repair work.

A number of generally valid notes for individual repair operations (which are otherwise listed several times at numerous points in the workshop manual) are summarized here ➔ [page 5](#). They apply to this workshop manual.

3.1 Components

Gearbox

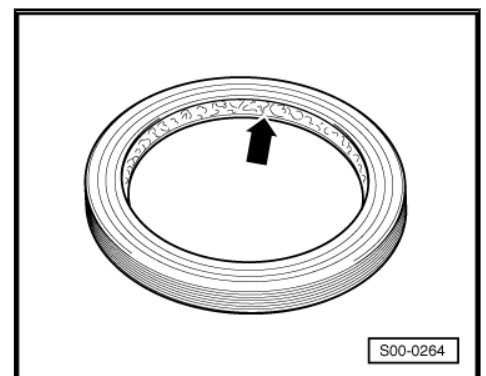
- ◆ Thoroughly clean the connection points and their surroundings before releasing.
- ◆ Bolts and other attachments should have a classification in the ➔ Electronic Catalogue of Original Parts .
- ◆ When installing the manual gearbox, ensure the dowel sleeves are correctly located between the engine and gearbox.
- ◆ When installing mounts as well as waxed components, the contact surfaces must be cleaned. Contact surfaces must be free of wax and grease.
- ◆ When replacing the gearbox, inspect the gearbox oil level and top up with oil if necessary ➔ [page 81](#).
- ◆ Filling capacity ➔ [page 1](#).
- ◆ Oil specification ➔ Electronic Catalogue of Original Parts .

Sealant

- ◆ Thoroughly clean the contact surfaces of the housing before applying the silicone sealant.
- ◆ Apply sealant -AMV 188 200 03- evenly and not too thickly.

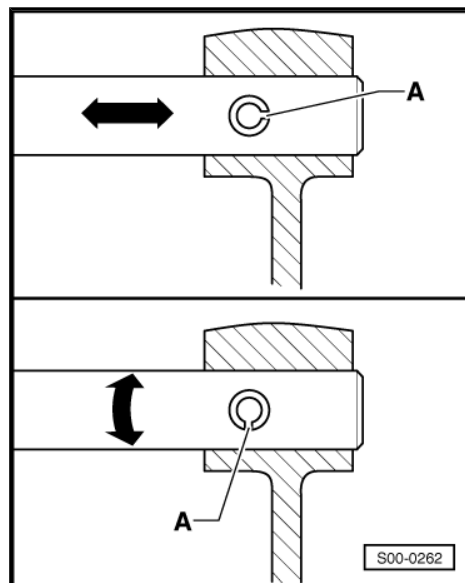
O-rings, gasket rings, gaskets

- ◆ Always replace O-rings, gasket rings and gaskets ➔ Electronic Catalogue of Original Parts .
- ◆ After removing gaskets, check the contact surface in the housing or shaft for burrs or damage which occurred during the assembly.
- ◆ Radial shaft seals - before mounting lightly oil at outside diameter and fill half the space between the sealing lips -arrow- with sealing grease -G 052 128 A1- .
- ◆ The open side of the sealing rings is turned towards the fluid to be sealed.
- ◆ Press in new gasket ring in such a way that the sealing lip is not located on the same point as the sealing lip of the old gasket ring (use tolerance for insertion depth).
- ◆ Before inserting lightly oil the O-rings, in order to prevent the rings being squashed during installation.
- ◆ Inspect the oil level after replacing the gaskets and gasket rings, top up oil if necessary ➔ [page 81](#) .



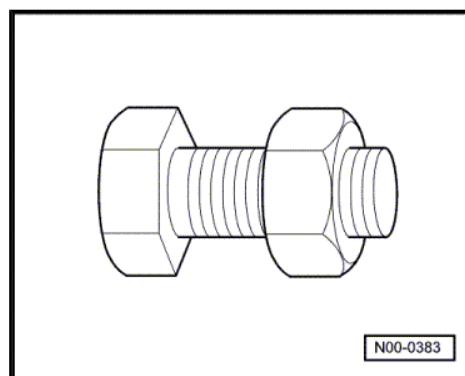
Locking elements

- ◆ Do not over-tension the circlips.
- ◆ Always replace damaged or excessively tensioned circlips ⇒ Electronic Catalogue of Original Parts .
- ◆ Circlips must be positioned in the base of the groove.
- ◆ Replace roll pins. Fitting position: Slot -A- longitudinal to power flow -arrow-.



Screws, nuts

- ◆ Slacken the bolts and nuts against the tightening sequence.
- ◆ Slacken and tighten screws or fixing nut of covers and housings without tightening sequence diagonally across in stages.
- ◆ Replace self-locking nuts and screws ⇒ Electronic Catalogue of Original Parts .
- ◆ Tightening torques apply for non-oiled nuts and bolts.
- ◆ Clean all threaded holes into which self-locking screws or screws with locking agent are inserted (using e.g. a thread tap). Otherwise there is a risk that the bolts will shear at the next disassembling.
- ◆ It is important to ensure at all bolted connections that the contact surfaces as well as the nuts and bolts are waxed only after being installed, should this be necessary.



Bearings

- ◆ New taper roller bearings are fitted as supplied and do not require any additional lubrication.
- ◆ Insert moist all bearings (except taper roller bearings) in the gearbox with gear oil.
- ◆ Before installing with the induction heater unit -VAS 6414- heat the inner ring of the bearing on a heating plate to approx. 100° C, when installing press in axial and play-free up to the stop.
- ◆ The temperature can be checked with a temperature measuring instrument.
- ◆ Do not mix up the outer and inner races of bearings of the same size.
- ◆ Always jointly replace tapered-roller bearings on the same shaft and use products of the same manufacturer.
- ◆ Always position needle bearing with the lettered side (thicker end) towards the drift pin.

Shims

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- ◆ Gauge shims at several points with a micrometer. Different tolerances allow to measure the required thickness for each washer very precisely.
- ◆ Inspect for burrs and damage.
- ◆ Install only adjusting washers which are in perfect condition.

Synchronizer rings

- ◆ These are not interchangeable. If re-using, allocate synchronizer rings to the same sliding gear.
- ◆ Inspect for wear, replace if necessary ⇒ Electronic Catalogue of Original Parts .
- ◆ Check slots -arrow 1- on synchronizer ring -A-, or check the inside of the ring for flattened parts (slots worn).
- ◆ When installing the intermediate ring -B-, outer -arrow 2- and inner -arrow 3- check contact surface for grooves, blue coloring (caused by overheating) and other damages.
- ◆ Insert moist with some gearbox fluid.

Pinions

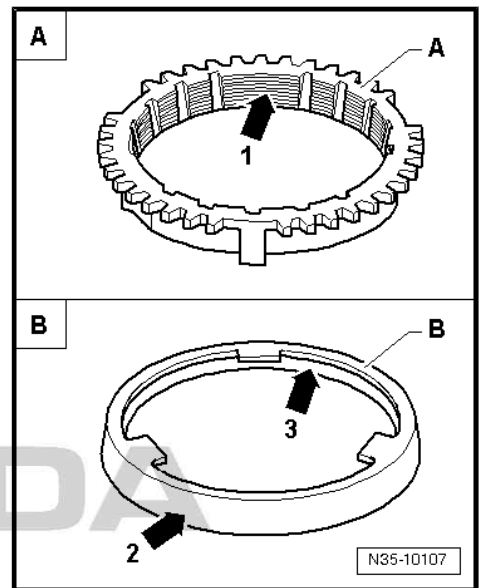
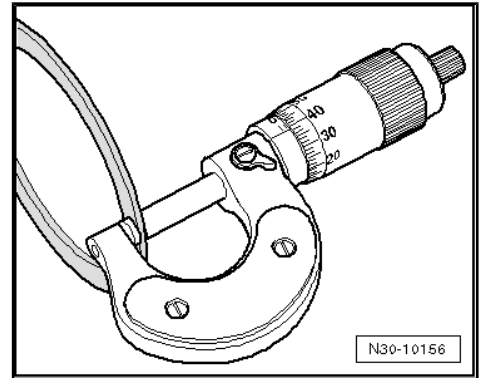
- ◆ Clean and heat on a heating plate or with the induction heater unit e.g. -VAS 6414- to approx. 100°C before pressing on.
- ◆ The temperature can be checked with a temperature measuring instrument.
- ◆ Check fitting position.

Output gear

- ◆ Check 1st to 5th gear sliding gears after assembly for low axial play or smooth operation.

Clutch control

- ◆ When removing gearbox, remove slave cylinder, do not detach the hoses.
- ◆ If the slave cylinder with connected hydraulic line is removed, do not depress the clutch pedal. Otherwise the tappet is pressed out of the slave cylinder.
- ◆ Do not tilt the clutch pressure plate, release or tighten in small stages crosswise
- ◆ If the clutch pedal does not return to its initial position after the coupling procedure - clutch pedal in home position - the clutch control must be bled (further measures ⇒ [page 23](#)).
- ◆ In order to reduce unpleasant odours if the clutch is burnt, thoroughly clean the clutch housing as well as the flywheel and the engine on the side of the gearbox.



30 – Clutch

1 Repairing clutch control

1.1 Overview

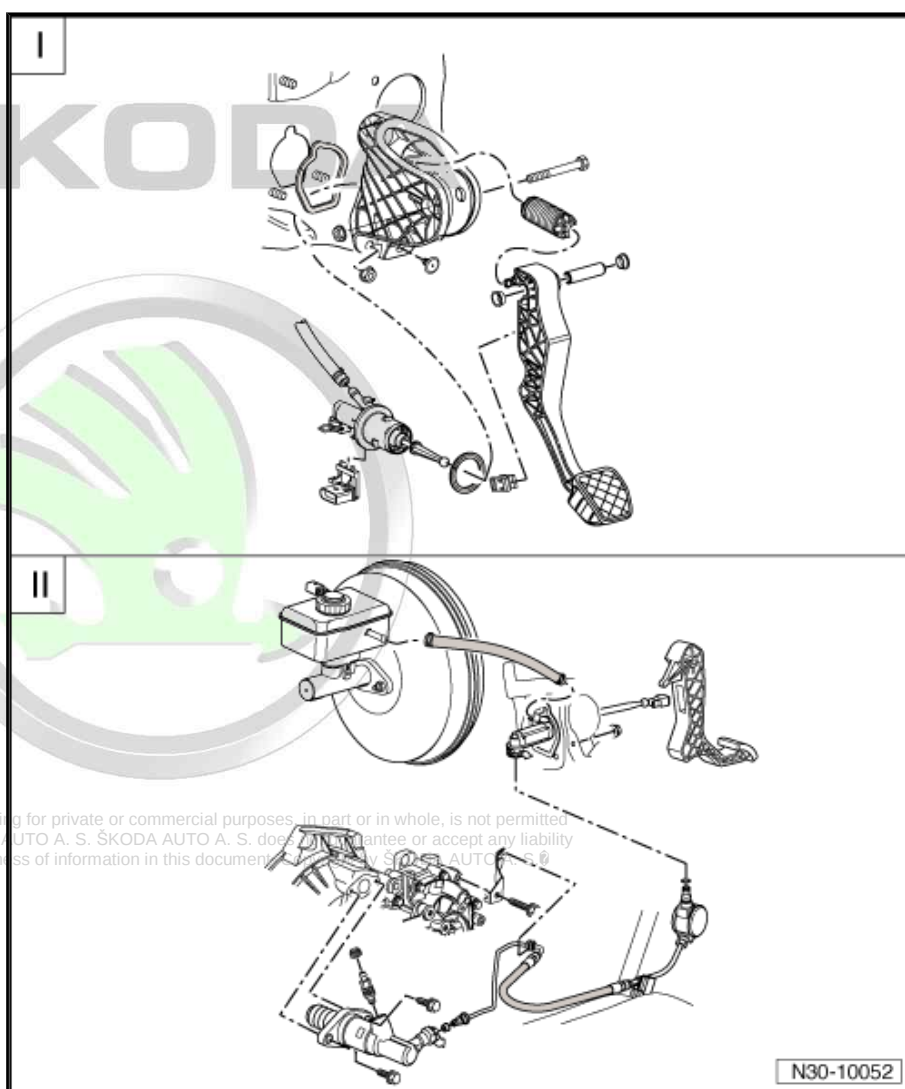


Note

- ◆ If the battery earth strap is disconnected and connected, carry out additional operations ➔ *Electrical System* ➔ *Rep. Gr. 27*.
- ◆ Grease all bearing and contact surfaces with grease -G 000 450 02-.

I - Summary of components -
Foot controls ➔ [page 9](#)

II - Summary of components -
Hydraulics ➔ [page 20](#)



1.2 Summary of components - Foot controls

1 - Front wall

- ☐ with mount for bracket

2 - Gasket

- ☐ between bracket and front wall
- ☐ self-adhesive
- ☐ glue to bracket
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

3 - Bearing bracket

- ☐ for support of clutch pedal
- ☐ removing and installing ⇒ [page 14](#)
- ☐ on certain vehicles, the mounting bracket is fitted with a damper ⇒ [page 10](#)

4 - Screw

5 - Over-centre helper spring

- ☐ removing and installing ⇒ [page 11](#)

6 - Bushing

7 - Bearing bolt

8 - Clutch pedal

- ☐ removing and installing ⇒ [page 13](#)

9 - Support

- ☐ removing and installing ⇒ [page 13](#)

10 - Gasket

- ☐ between master cylinder and bracket
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

11 - Master cylinder

- ☐ removing and installing after removing the bracket ⇒ [page 17](#)
- ☐ test tightness ⇒ [page 23](#)

12 - Clutch position sender -G476-

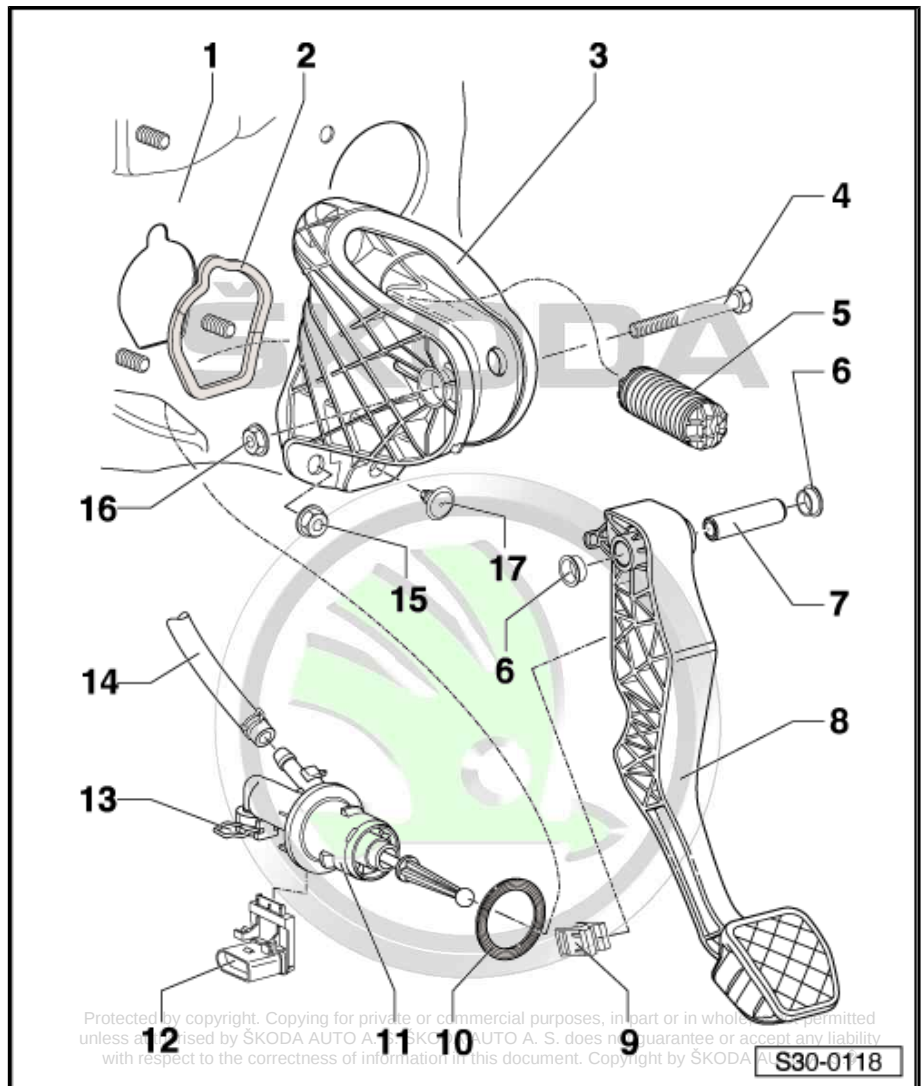
- ☐ removing and installing ⇒ [page 18](#)
- ☐ check ⇒ Vehicle diagnosis, testing and information system VAS 5051

13 - Clamp

- ☐ to remove and install the tube-hose line pull out retaining clip up to the stop

14 - Tubing

- ☐ out of rubber
- ☐ as of 12.05 on certain vehicles out of plastic ⇒ [page 22](#)
- ☐ if the return hose is made out of plastic, do not use hose clamp -MP7-602-
- ☐ test tightness ⇒ [page 23](#)





15 - 20 Nm

- ☐ 3 pieces
- ☐ self-locking
- ☐ for bracket on front wall
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

16 - 25 Nm

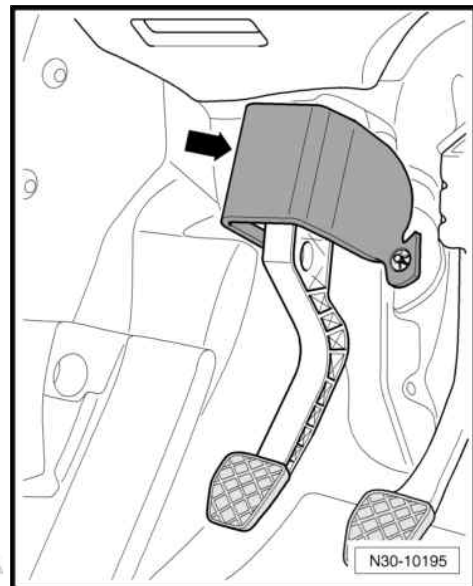
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

17 - Stop

- ☐ for the clutch pedal

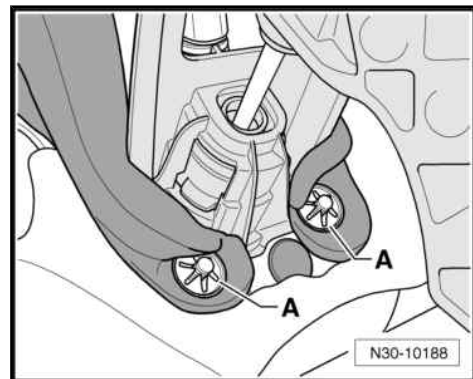
Mounting bracket with damper

- Remove, if present, the damper -arrow- in the lower area of the clutch pedal mounting bracket.



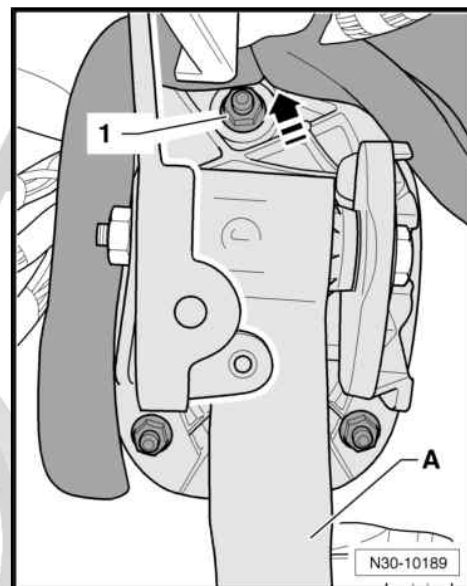
ŠKODA

- Remove clamping plates -A-.



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- Press the damper in the area of the upper nut -1- above the clutch pedal -A- upwards in -direction of arrow-.



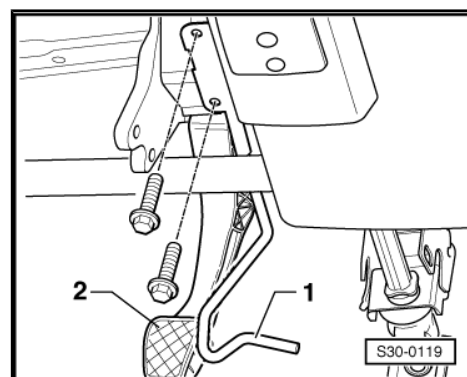
1.3 Removing and installing the over-centre helper spring

Special tools and workshop equipment required

- ◆ Release tool -T10178-

Removing

- Push the driver seat as far as possible towards the rear and position the steering wheel in the highest position.
- Remove lower part of the dash panel insert on the driver's side
⇒ Body Work ⇒ Rep. Gr. 70 .
- Unscrew crash strut -1- in front of the clutch pedal -2-.
- Remove the damper of the mounting bracket, if present
⇒ [page 10](#) .



- Unscrew clutch pedal -1- from bracket -3-, to this end release nut -2- and pull out screw -5-.



Note

The clutch pedal remains hanging on the actuating rod of the master cylinder.

- Swivel clutch pedal slightly downwards and remove over-centre helper spring -4- from the bracket.

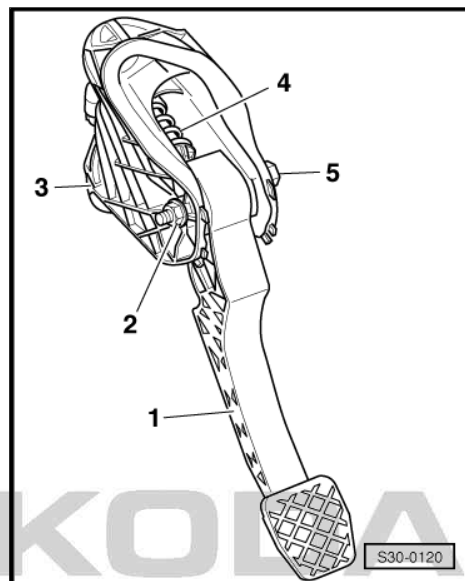
Install

Installation is performed in the reverse order, pay attention to the following points:

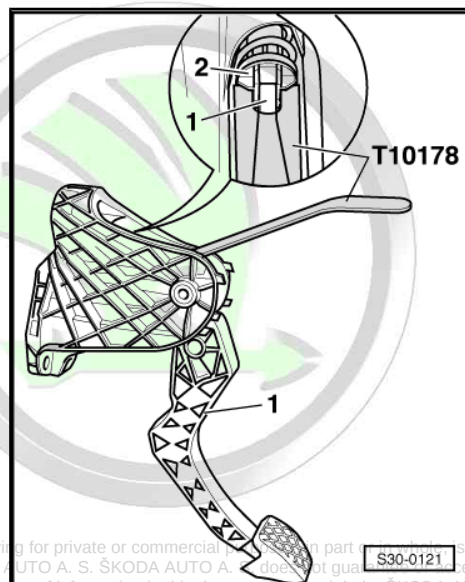


Note

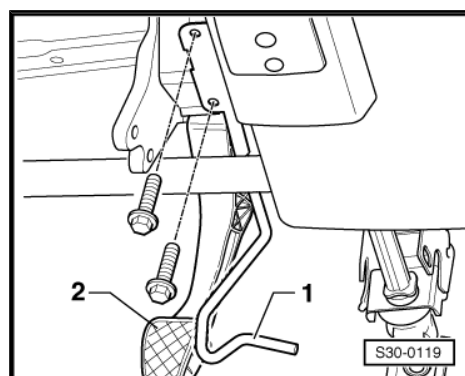
Replace self-locking nut ⇒ Electronic Catalogue of Original Parts .



- Insert over-centre helper spring from above into the bracket and while doing so hold the the spring end in the fitting position using the release tool -T10178- .
- Insert bearing bolt of clutch pedal into the step bearing of the over-centre helper spring.
- Press on clutch pedal slightly, slide through screw and tighten self-locking nut.



- Screw on crash strut -1- in front of the clutch pedal -2-.
- Install the damper of the mounting bracket (if present).
- Install lower part of the dash panel insert on the driver's side
⇒ Body Work ⇒ Rep. Gr. 70 .



Tightening torque

Component	Nm
Clutch pedal to bearing bracket	⇒ page 9
Crash strut to bracket/steering column	9

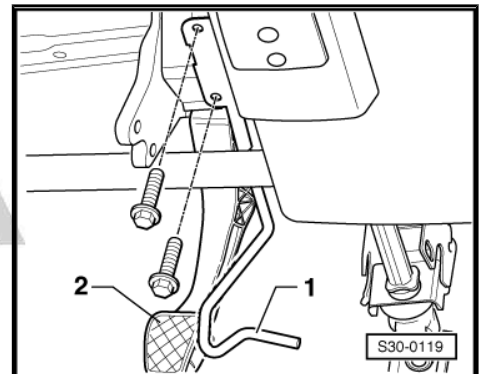
1.4 Removing and installing the clutch pedal

Special tools and workshop equipment required

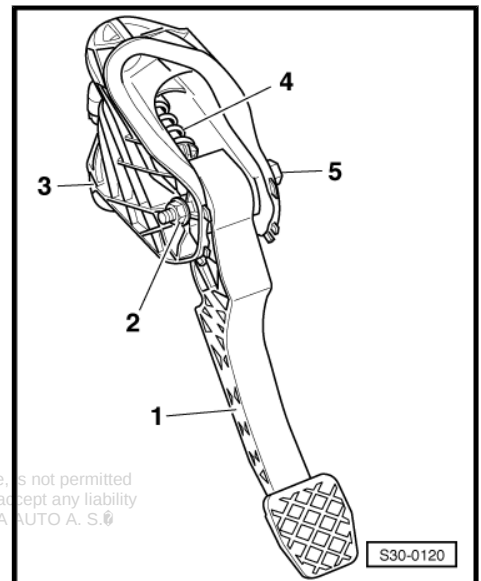
- ◆ Pliers -T10005-
- ◆ Release tool -T10178-

Removing

- Push the driver seat as far as possible towards the rear and position the steering wheel in the highest position.
- Remove lower part of the dash panel insert on the driver's side
⇒ Body Work ⇒ Rep. Gr. 70 .
- Unscrew crash strut -1- in front of the clutch pedal -2-.
- Remove the damper of the mounting bracket, if present
⇒ [page 10](#) .



- Unscrew clutch pedal -1- from bracket -3-, to this end release nut -2- and pull out screw -5-.
- Swivel clutch pedal slightly forwards and remove over-centre helper spring -4- from the bracket.



- Release support of actuating rod of master cylinder with pliers - T10005- .
- Remove clutch pedal.

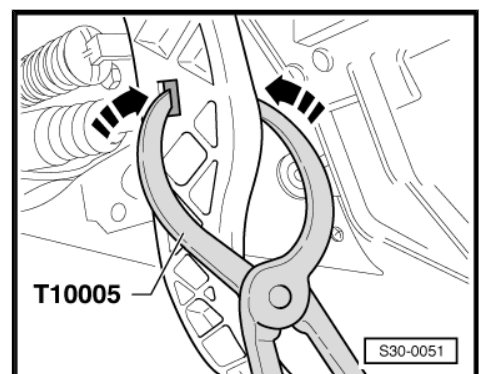
Install

Installation is performed in the reverse order, pay attention to the following points:

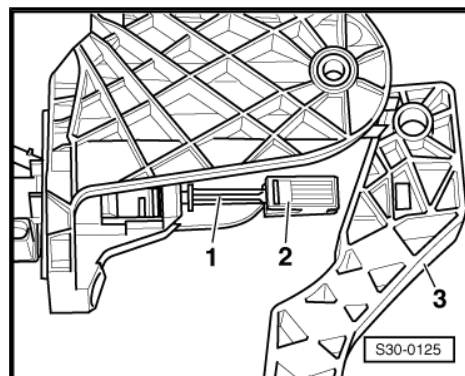


Note

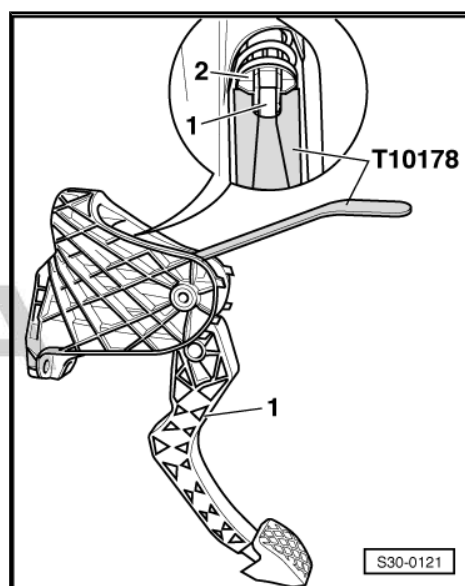
Replace self-locking nut ⇒ *Electronic Catalogue of Original Parts* .



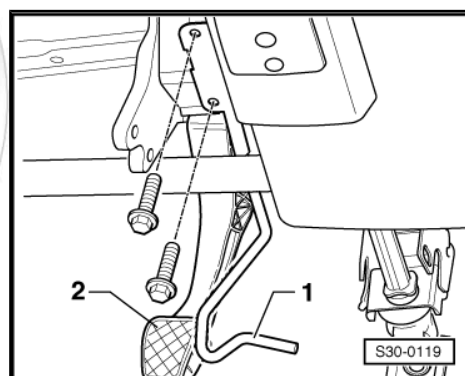
- Attach support -2- to the actuator rod -1- of the master cylinder.
- Press support into the clutch pedal until it audibly clicks into place.



- Insert over-centre helper spring from above into the bracket and while doing so hold the the spring end in the fitting position using the release tool -T10178- .
- Insert bearing bolt of clutch pedal into the step bearing of the over-centre helper spring.
- Press on clutch pedal slightly, slide through screw and tighten self-locking nut.



- Screw on crash strut -1- in front of the clutch pedal -2-.
- Install the damper of the mounting bracket (if present).
- Install lower part of the dash panel insert on the driver's side
⇒ Body Work ⇒ Rep. Gr. 70 .



Tightening torque

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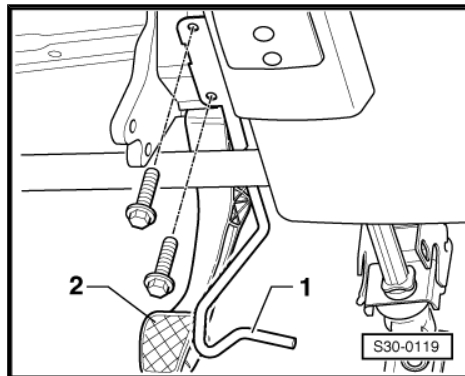
Component	Nm
Clutch pedal to bearing bracket	⇒ page 9
Crash strut to bracket/steering column	9

1.5 Removing and installing bracket

Special tools and workshop equipment required

- ◆ Hose clamp -MP7-602 (3094)-
- ◆ Closing tool -T10249/1-

- Unscrew crash strut -1- in front of the clutch pedal -2-.
- Remove the damper of the mounting bracket, if present
⇒ [page 10](#) .



- Unscrew the nuts -2-.
- Remove bracket -1-.

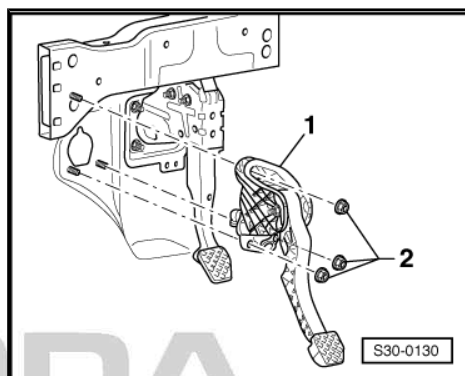
Install

Installation is performed in the reverse order, pay attention to the following points:



Note

- ♦ Replace gasket rings ⇒ *Electronic Catalogue of Original Parts* .
- ♦ Secure all hose connections with hose clamps which comply with the series design ⇒ *Electronic Catalogue of Original Parts* .



- Press in tube-hose line -1- with new gasket ring -2- onto the connection of the master cylinder -4-, until the locking clip -3- is heard to click into position.
- For testing pull on the tube-hose line.
- Bleed the clutch control ⇒ [page 27](#) .
- Install the damper of the mounting bracket (if present).
- Install battery tray and battery ⇒ *Electrical System* ⇒ Rep. Gr. 27 .
- Install air filter ⇒ *Engine* ⇒ Rep. Gr. 23 .

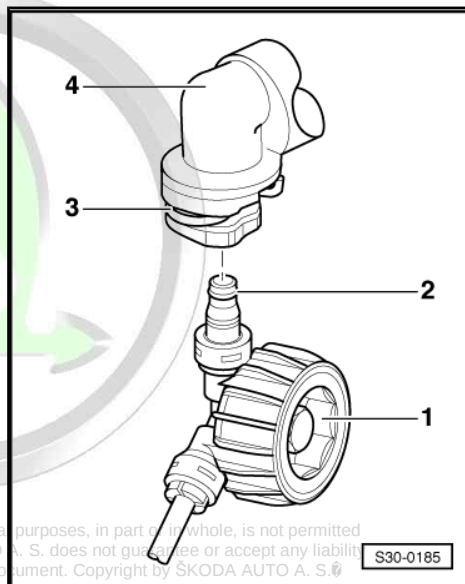


Note

After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ *Electrical System* ⇒ Rep. Gr. 27 .

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- Connect earth strap of battery ⇒ *Electrical System* ⇒ Rep. Gr. 27 .



Tightening torque

Component	Nm
Bearing bracket	⇒ page 9
Crash strut to bracket/steering column	9

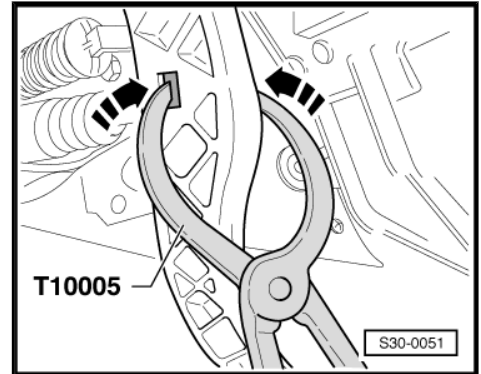
1.6 Removing and installing the master cylinder

Special tools and workshop equipment required

- ◆ Pliers -T10005-

Removing

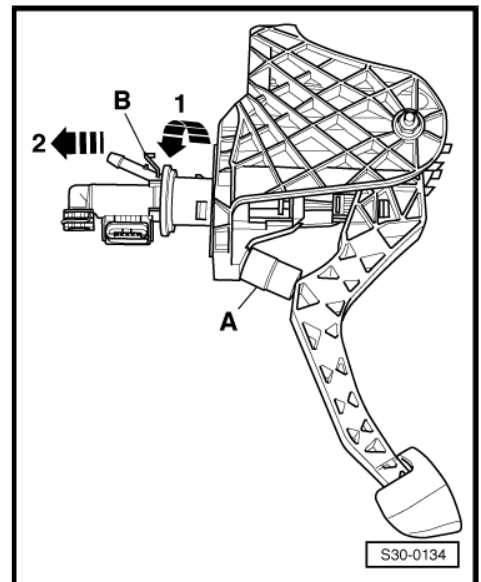
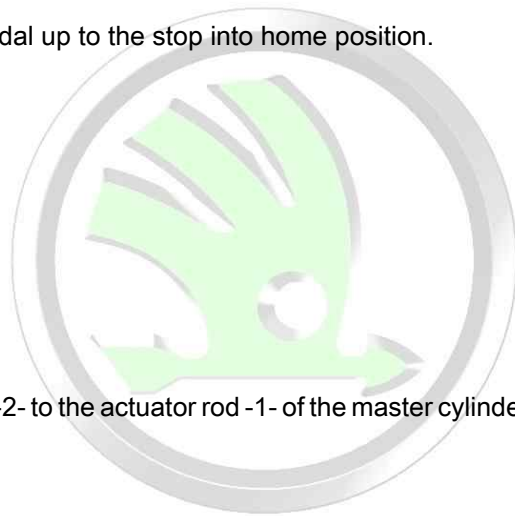
- Removing bracket ⇒ [page 14](#) .
- Release support of actuating rod of master cylinder with pliers - T10005- .



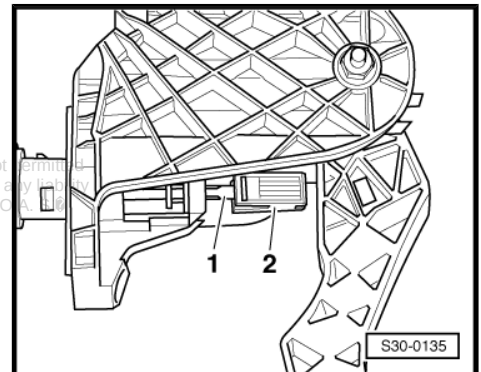
- Place a spacer -A- between clutch pedal and stop and press clutch pedal forwards.
- ◆ Length of spacer = approx. 40 mm
- Release release pin -B- and pull master cylinder out of bracket -arrow 1- and -arrow 2-.

Install

- Move clutch pedal up to the stop into home position.

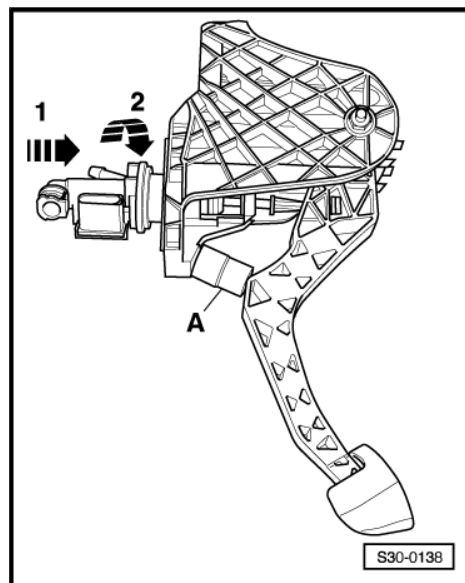


- Attach support -2- to the actuator rod -1- of the master cylinder.

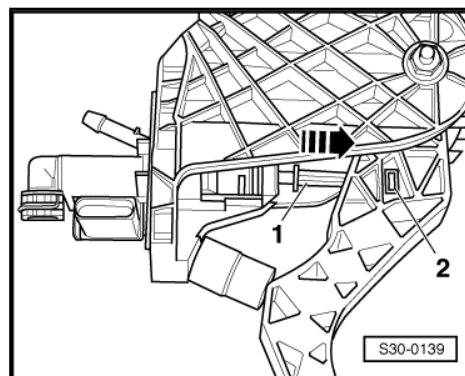


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- Place a spacer -A- between clutch pedal and stop and press clutch pedal forwards.
- ◆ Length of spacer = approx. 40 mm
- Lock master cylinder at bracket -arrow 1- and -arrow 2-.



- Press actuating rod -1- of master cylinder into direction of arrow, until the support -2- locks audibly into the clutch pedal.
- Installing bracket ➔ [page 14](#) .



1.7 Removing and installing clutch position sender -G476-

Special tools and workshop equipment required

- ◆ Hose clamp -MP7-602 (3094)-
- ◆ Closing tool -T10249/1-

Removing



Note

After the battery earth strap is disconnected and re-connected, carry out additional operations ➔ Electrical System ➔ Rep. Gr. 27 .

- Disconnect the battery-earth strap with the ignition off ➔ Electrical System ➔ Rep. Gr. 27 .
- Remove air filter ➔ Engine ➔ Rep. Gr. 23 .
- Remove battery, battery cover and battery tray ➔ Electrical System ➔ Rep. Gr. 27 .

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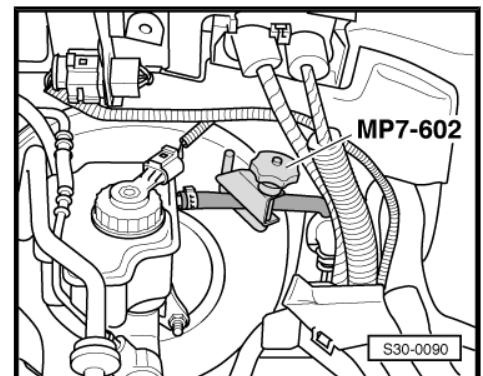
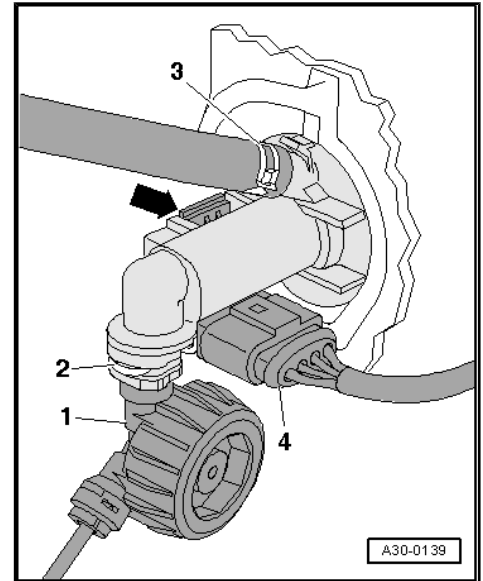


If the round piece of the tube-hoseline -1- is directly installed underneath the master cylinder, this line must be removed.

i Note

When performing the following work, make sure that no brake fluid comes into contact with the frame side rail or the gearbox. If this is the case, these points must be cleaned thoroughly.

- Pinch off return hose to master cylinder with hose clamp - MP7-602 (3094)- (if the return hose is made out of plastic, do not use the hose clamp -MP7-602- , otherwise the return hose can get damaged).



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- Remove inlet hose -3- at master cylinder (remove plastic return hose -3- at master cylinder and close with a suitable tool e.g. -T10249/1-).
- Unlock locking clip -2- with a screwdriver and detach tube-hose line -1- at master cylinder.
- Clip off clutch position sender -G476- at master cylinder -arrow- and remove with attached connector -4-.

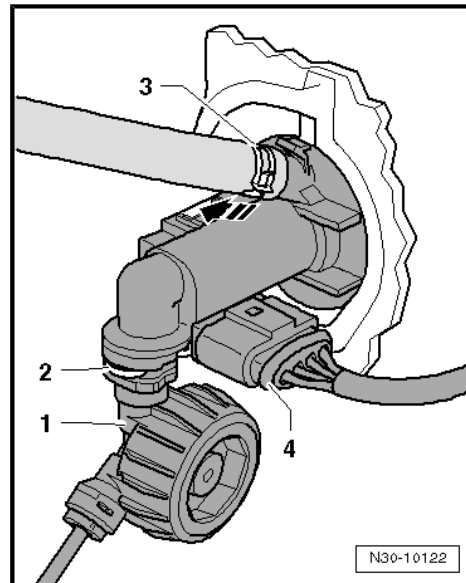
Install

Installation is performed in the reverse order, pay attention to the following points:



Note

- ◆ Replace gasket rings ⇒ *Electronic Catalogue of Original Parts* .
- ◆ Secure all hose connections with hose clamps which comply with the series design ⇒ *Electronic Catalogue of Original Parts* .



If the tube-hose line was removed:

- After installing the tube-hose line, pull on this line for checking.
- Bleed the clutch control ⇒ [page 27](#) .
- Install battery tray and battery ⇒ Electrical System ⇒ Rep. Gr. 27 .
- Install air filter ⇒ Engine ⇒ Rep. Gr. 23 .

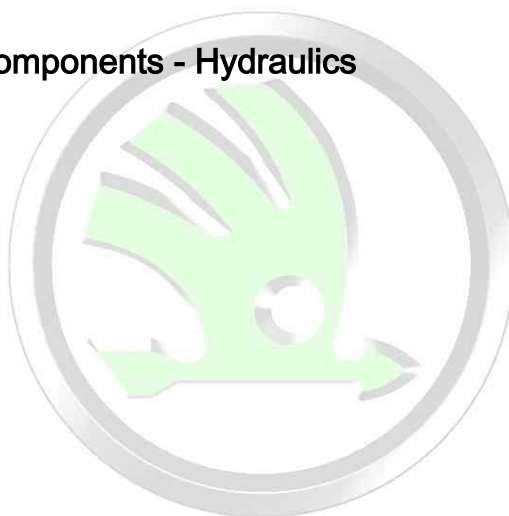


Note

After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ *Electrical System* ⇒ Rep. Gr. 27 .

- Connect earth strap of battery ⇒ Electrical System ⇒ Rep. Gr. 27 .

1.8 Summary of components - Hydraulics



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1 - Brake fluid reservoir

- ☐ test tightness
⇒ [page 23](#)

2 - Spring strap clamp

- ☐ is not installed on all vehicles

3 - Tubing

- ☐ out of rubber
- ☐ as of 12.05 on certain vehicles out of plastic
⇒ [page 22](#)
- ☐ if the return hose is made out of plastic, do not use hose clamp - MP7-602-
- ☐ test tightness
⇒ [page 23](#)

4 - Master cylinder

- ☐ removing and installing
⇒ [page 17](#)
- ☐ test tightness
⇒ [page 23](#)

5 - Clamp

- ☐ to remove and install the tube-hose line pull out retaining clip up to the stop

6 - Support

- ☐ removing and installing
⇒ [page 13](#)

7 - Clutch pedal

- ☐ removing and installing
⇒ [page 13](#)

8 - 20 Nm

- ☐ 3 pieces
- ☐ Mounting bracket on the body
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

9 - O-ring

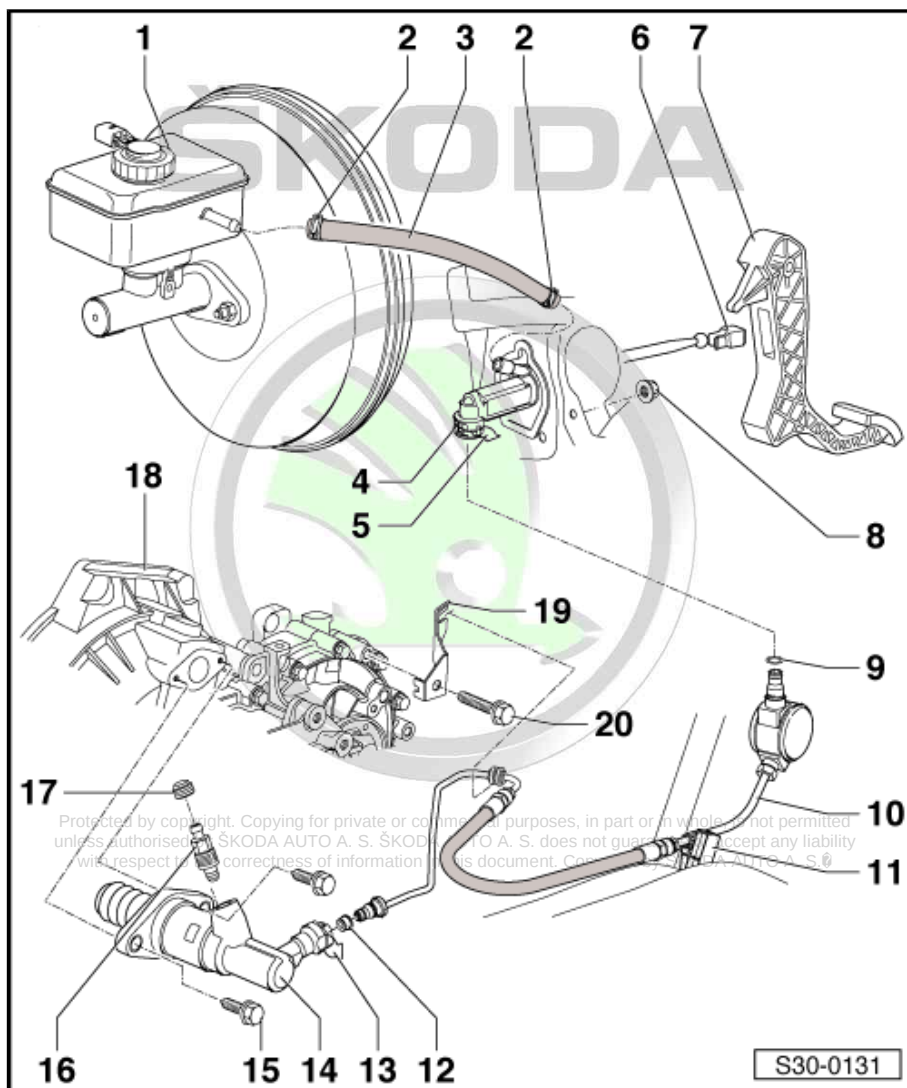
- ☐ pull onto line connection
- ☐ moisten with brake fluid to install
- ☐ do not interchange, the O-rings Pos. 9 and Pos. 12 are different ⇒ [page 22](#)
- ☐ Assignment ⇒ Electronic Catalogue of Original Parts
- ☐ always replace ⇒ Electronic Catalogue of Original Parts
- ☐ test tightness ⇒ [page 23](#)

10 - Tube-hose line

- ☐ Assignment ⇒ Electronic Catalogue of Original Parts
- ☐ Remove battery and battery tray for removing ⇒ Electrical System ⇒ Rep. Gr. 27
- ☐ test tightness ⇒ [page 23](#)

11 - Support

- ☐ Mounted at the structure
- ☐ for tube-hose line pos. 10



12 - O-ring

- ☐ pull onto line connection
- ☐ moisten with brake fluid before installing
- ☐ do not interchange, the O-rings Pos. 9 and Pos. 12 are different ⇒ [page 22](#)
- ☐ Assignment ⇒ Electronic Catalogue of Original Parts
- ☐ always replace ⇒ Electronic Catalogue of Original Parts
- ☐ test tightness ⇒ [page 23](#)

13 - Clamp

- ☐ to remove and install the tube-hose line pull out retaining clip up to the stop

14 - Slave cylinder

- ☐ removing and installing ⇒ [page 24](#)
- ☐ test tightness ⇒ [page 23](#)

15 - 20 Nm

16 - Vent valve

- ☐ pay attention to different versions; assign via the ⇒ Electronic Catalogue of Original Parts
- ☐ Bleed the clutch control ⇒ [page 27](#)
- ☐ test tightness ⇒ [page 23](#)

17 - Dust cap

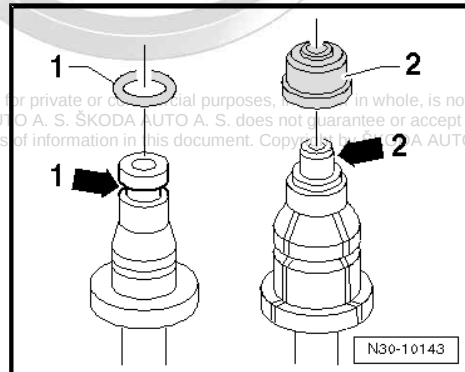
18 - Gearbox

19 - Support

20 - 20 Nm

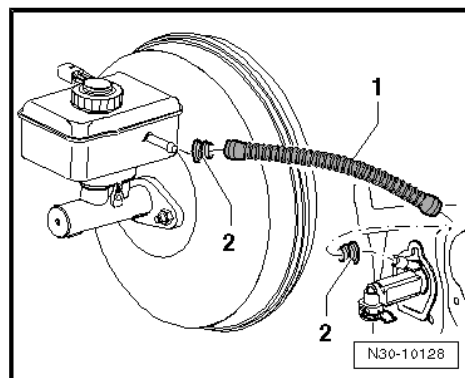
Gasket rings / O-rings for tube-hose lines and/or plastic line

- ◆ -1- Line connection with circular slot -arrow 1-
- ◆ -2- Line connection with collar -arrow 2-



as of 12.05 on certain vehicles plastic return hose -1-

- ◆ Gaskets -2- must be present on the return hose.
- ◆ Do not use hose clamp -MP7-602-

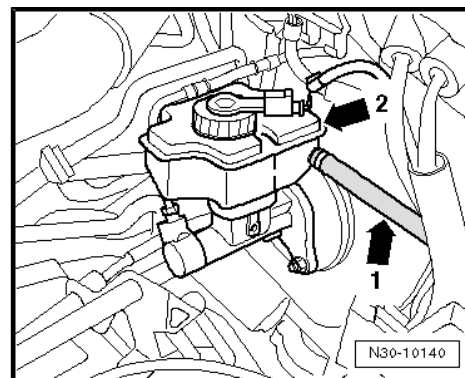


1.9 Check hydraulic clutch control



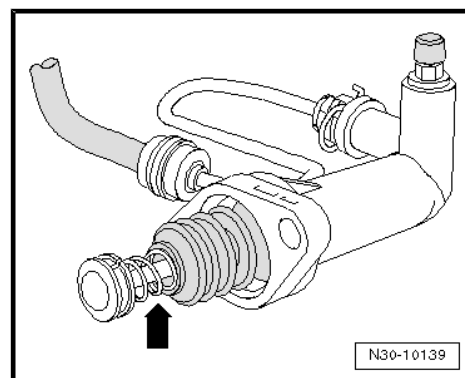
Note

- ◆ If the master cylinder and/or slave cylinder must be replaced due to the predetermined fault, first of all check the hydraulic clutch control.
- ◆ If the slave cylinder with the connected tube-hose line is removed from the gearbox, do no longer depress the clutch pedal. Otherwise, the piston can be pressed out of the slave cylinder and thus be destroyed.
- ◆ The hydraulic clutch control is connected to one of the chambers -arrow 2- of the brake fluid reservoir by the return hose -arrow 1-.
- ◆ If there is little or no brake fluid in this chamber, there is a leak in the system.
- ◆ Traces of brake fluid on or below the gearbox, as well as on the noise insulation under the gearbox is a result, amongst others, of an external leak.
- ◆ In case of leakage, the corresponding component must be replaced ⇒ *Electronic Catalogue of Original Parts*.
- ◆ Check the correct routing of the tube-hose line between the master cylinder and the slave cylinder. The line must not be bent or jammed at all in a sharp angle.
- ◆ The brake pedal return must not be obstructed by moved or additional covers (floor coverings).



Inspect the complete hydraulic system for leaks.

- Carry out a visual inspection of the following components of the hydraulic clutch control for leaks:
 - ◆ Check brake fluid level in the brake fluid reservoir
 - ◆ Return hose between brake fluid reservoir and master cylinder
 - ◆ Master cylinder
 - ◆ Tube-hose line between master cylinder and slave cylinder
 - ◆ Connection points (plug and screw connections) also in a non-visible area
 - ◆ Slave cylinder
- Remove the slave cylinder (do not open the line system) and check if no brake fluid drips out of the bellows, to do so remove the bellows from the rod -arrow-.
- If necessary, bleed the clutch control ⇒ [page 27](#).
- Then depress the clutch pedal carefully, at the same time hold the foot controls in five different positions for approx. 20s over the entire distance the pedal has to travel and check that the foot controls do not fall through on their own while being held (in five positions). While doing so, a second mechanic must check if fluid is leaking from the other components of the hydraulic clutch control ⇒ [page 23](#).



1.10 Removing and installing the slave cylinder

Special tools and workshop equipment required

- ◆ Hose clamps -MP7-602 (3094)-
- ◆ Grease -G 000 100-
- ◆ Closing tool -T10249/1-



Note

- ◆ *If the slave cylinder must be replaced due to the predetermined fault, first of all check the hydraulic clutch control ⇒ [page 23](#).*
- ◆ *If the slave cylinder with the connected tube-hose line is removed from the gearbox, do no longer depress the clutch pedal. Otherwise, the piston can be pressed out of the slave cylinder and thus be destroyed.*
- ◆ *When performing the following work, make sure no brake fluid comes into contact with the gearbox. If this is the case, these points must be cleaned thoroughly.*

1.10.1 Removing



Note

After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27.

- Disconnect the battery-earth strap with the ignition off ⇒ Electrical System ⇒ Rep. Gr. 27.
- Remove air filter ⇒ Engine ⇒ Rep. Gr. 23.
- Remove battery and battery tray ⇒ Electrical System ⇒ Rep. Gr. 27.
- Remove circlip -arrow 1- for shift cable from gearbox shift lever -A-.

Vehicles up to 05.07 (metal relay lever)

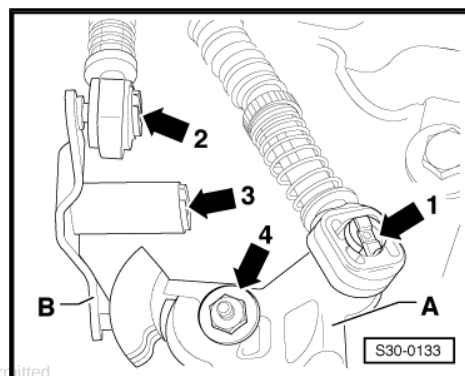
- Remove circlip -arrow 2- for selector cable from relay lever -B-.
- Remove selector cable and shift cable from the studs.
- Detach circlip -arrow 3- from the relay lever -B- and remove relay lever.

Vehicles from 06.07 (plastic relay lever)

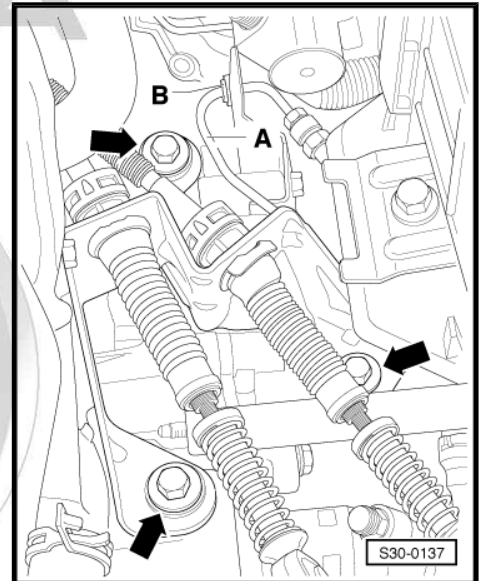
- Pull off the shift cable from the stud.
- Remove relay lever together with cable lock ⇒ [page 61](#).

Continued for all vehicles

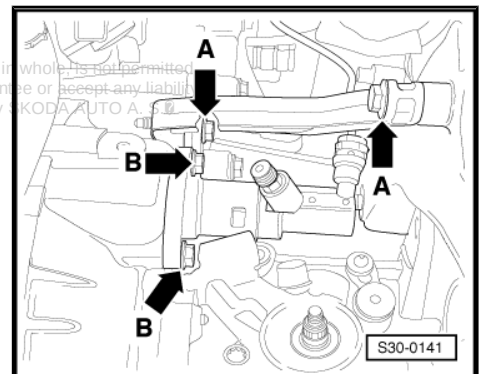
- Remove the gearshift lever -A-, for this step unscrew nut -arrow 4-.



- Disconnect the Bowden cable support from gearbox -arrows-.
- Tie up shift cable and selector cable.
- Remove bracket -B- from the gearbox and pull off from the tube-hose line -A-.



- Remove gearbox support -arrows A- (if applicable).
- Removing the slave cylinder -arrows B-.
- Place a non-fluffing cloth under the slave cylinder.

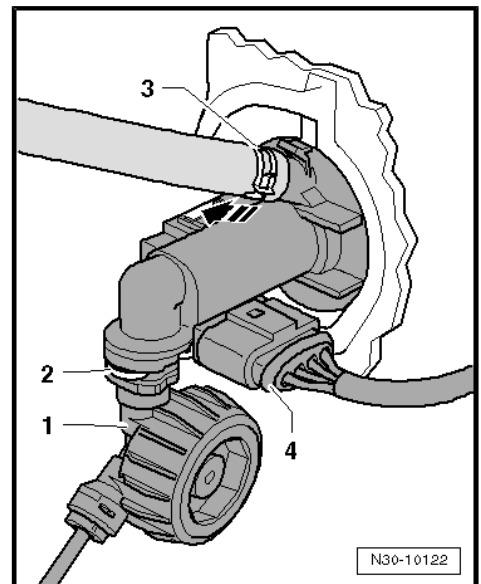


i Note

Make sure no brake fluid comes into contact with the gearbox. If this is the case, this point must be cleaned thoroughly.

A tube-hose line (rubber line) or a plastic line is fitted between the master cylinder and the bleeder.

- If a plastic line is fitted, then the return hose -3- must be removed at the master cylinder and closed with a suitable tool e.g. -T10249/1- (do not use hose clamp -MP7-602- , otherwise the return hose -3- can get damaged).

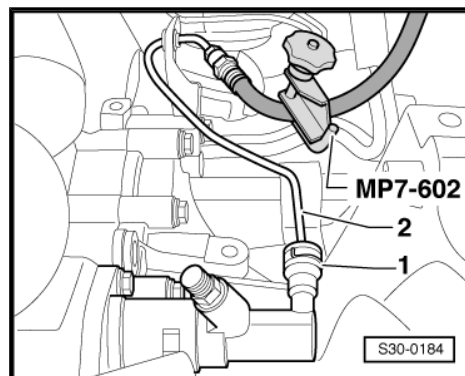


- If a tube-hose line is fitted (rubber line), pinch off the hose for the tube-hose line -A- to the master cylinder with the hose clamp -MP7-602 (3094)- .
- Pull out locking clip -1- up to the stop and thus pull the tube-hose line -2- out of the slave cylinder (close plastic tube-hose line in a suitable manner).



Note

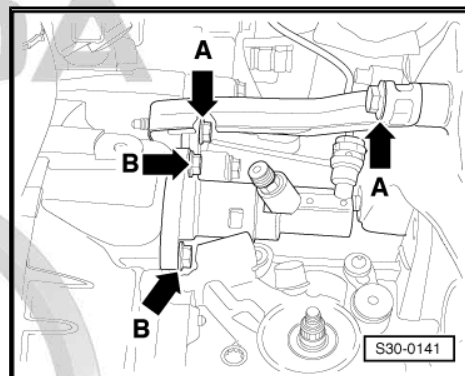
Do not depress the clutch pedal.



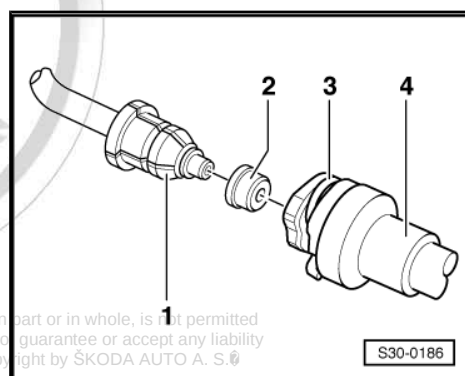
1.10.2 Install

Installation is performed in the reverse order, pay attention to the following points:

- Grease tappet head with grease -G 000 100- .
- Install slave cylinder and tighten screws -arrows B- to the given tightening torque.



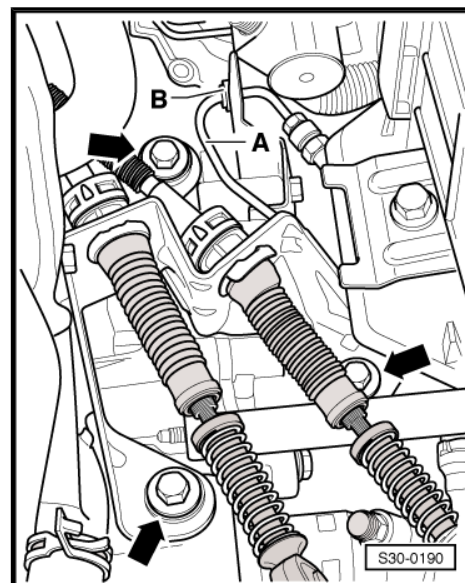
- Push the tube-hose line -1- with new gasket ring -2- into the slave cylinder -4- up to the stop.
- Press in the retaining clip of the tube-hose line up to the stop.
- For testing pull on the tube-hose line.



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- Install bracket -B- at the gearbox and insert the tube-hose line -A-.
- Remove hose clamp -MP7-602 (3094)- .

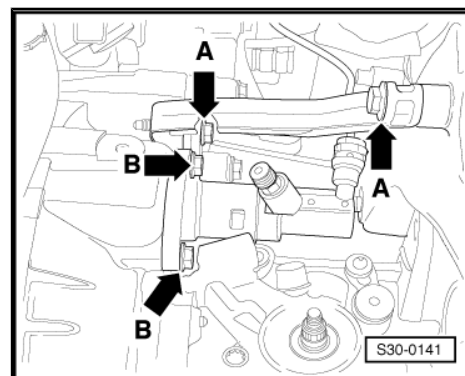


- Attach gearbox support to gearbox -arrows A- and tighten.
- After installing the slave cylinder bleed the clutch control
⇒ [page 27](#) .

Assembling gearshift mechanism ⇒ [page 55](#) .

Setting the shift mechanism ⇒ [page 69](#) .

- Install battery tray and battery ⇒ Electrical System ⇒ Rep. Gr. 27 .
- Install air filter ⇒ Engine ⇒ Rep. Gr. 23 .



Note

After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .

- Connect earth strap of battery ⇒ Electrical System ⇒ Rep. Gr. 27 .

Tightening torque

Component	Nm
Slave cylinder to gearbox	⇒ page 20
bracket for tube-hose line	⇒ page 20
Support to gearbox mounting bracket and gearbox	⇒ page 79
Gearbox shift lever to gearshift shaft	⇒ page 55
Cable support to gearbox	⇒ page 55

1.11 Bleed the clutch control

Special tools and workshop equipment required

- ◆ Brake filling and bleeding device (e.g. -VAS 5234- or -ROM-ESS S15-

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Note

- ◆ *When performing the following work, make sure that no brake fluid comes into contact with the frame side rail or the gearbox.*
- ◆ *A pre-filling of the system is not necessary!*

Brake fluid specification ⇒ Chassis ⇒ Rep. Gr. 00

- Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 .
- Connect the brake filling and bleeding device .

To bleed use ventilation hose .

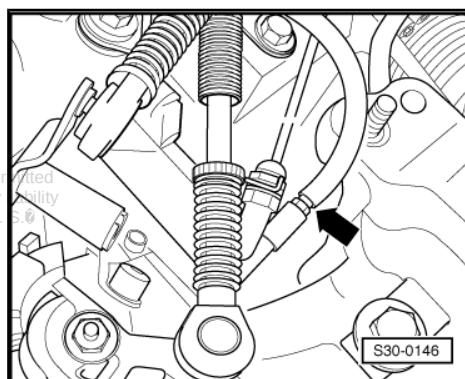
- Connect ventilation hose with the drip bottle of the brake bleeding device.
- Fit the bleeder hose onto the vent valve -arrow-.
- Activate system with a pressure of 0.2 MPa.
- Open vent valve.



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On certain vehicles the vent valve can be opened by hand. To do so, turn the vent valve 180° to the left as far as the stop.

- Allow approx. 100 cm³ of brake fluid to flow out.
- Close vent valve.
- Activate foot controls forcefully from stop to stop between 10 and 15 times.
- Activate system with a pressure of 0.2 MPa.
- Open vent valve.
- Allow approx. 50 cm³ more brake fluid to flow out.
- Close vent valve.
- After completing the bleeding procedure activate the clutch pedal repeatedly.
- If necessary, bleed the clutch control once again ⇒ [page 27](#) .
- Install air filter ⇒ Engine ⇒ Rep. Gr. 23 .



2 Repairing clutch control

Special tools and workshop equipment required

- ◆ Grease -G 000 100-

1 - Gearbox

2 - Ball stud, 25 Nm

- ☐ Original grease must be removed from the contact point of the clutch release lever
- ☐ grease with grease -G 000 100-

3 - Gasket ring for drive shaft

- ☐ removing and installing ⇒ [page 106](#)
- ☐ replace ⇒ Electronic Catalogue of Original Parts

4 - Guide bushing with O-ring

- ☐ O-ring is fitted to guide bushing
- ☐ if O-ring is damaged, replace O-ring and bushing together ⇒ Electronic Catalogue of Original Parts
- ☐ remove and install ⇒ [page 30](#) together with the clutch release lever and clutch release bearing
- ☐ Grease guide bushing in the area of the release lever with grease -G 000 100-

5 - Retaining spring

- ☐ attach to clutch release lever

6 - Cylinder bolt, 20 Nm

7 - Clutch release lever

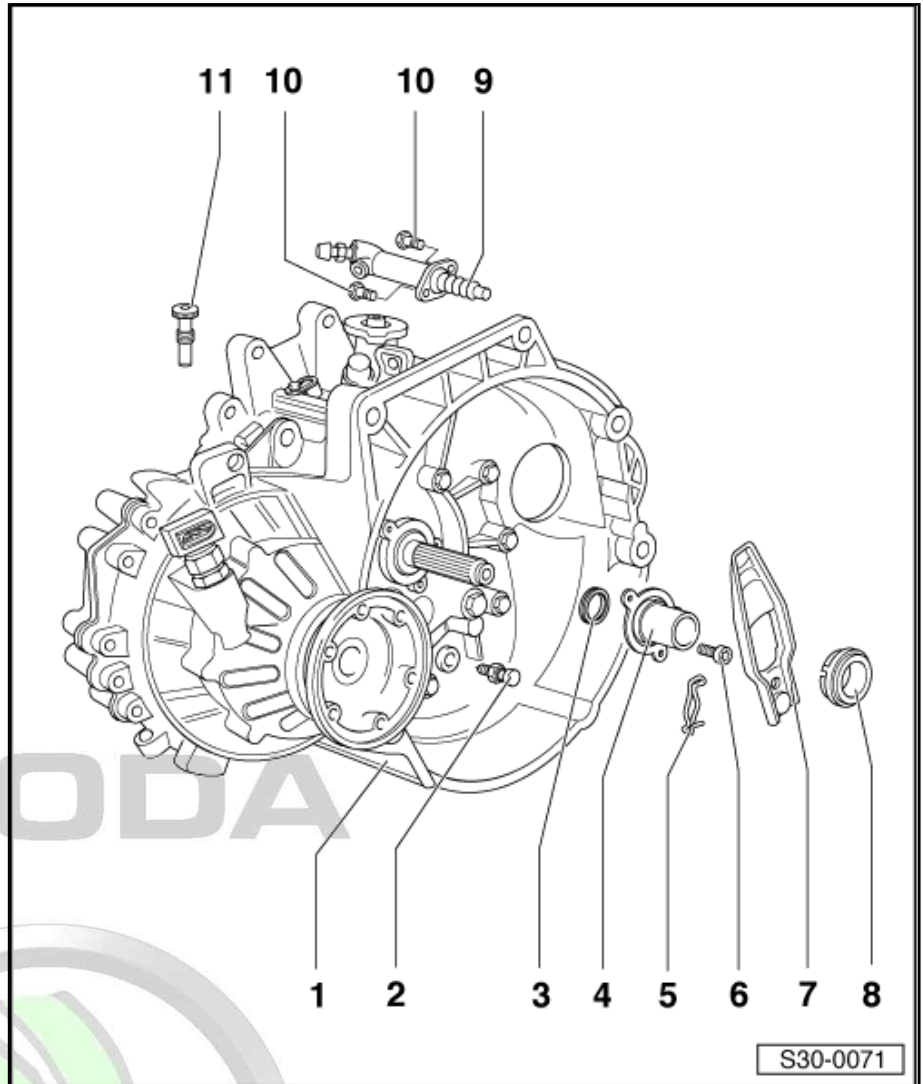
- ☐ remove and install ⇒ [page 30](#) together with clutch release bearing
- ☐ Original grease must be removed from the contact point of the clutch release lever
- ☐ grease contact point on the ball stud with grease -G 000 100-

8 - Release bearing

- ☐ Do not wash the bearing, just wipe clean
- ☐ replace noisy bearings ⇒ Electronic Catalogue of Original Parts
- ☐ removing and installing ⇒ [page 30](#)
- ☐ grease contact points on the clutch release lever with grease -G 000 100-

9 - Slave cylinder

- ☐ removing and installing ⇒ [page 24](#)
- ☐ Grease tappet head with grease - G 000 100-





10 - Collar screw, 20 Nm

11 - Mounting bolt

- ☐ secures the clutch release lever when installing the gearbox ⇒ [page 78](#)
- ☐ unscrew after the gearbox has been fitted ⇒ [page 78](#)

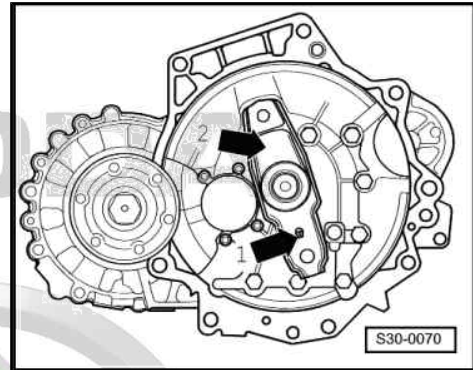


Note

If a mounting bolt Pos. 11 is not provided, use bolt M8 x 35.

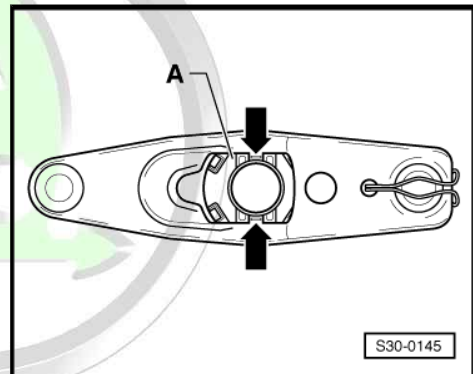
Remove and install the clutch release lever together with the release bearing and guide bushing

- Unhook spring -arrow 1- upwards.
- Remove clutch release lever -arrow 2- and clutch release bearing.
- Installation is carried out in the reverse order.



Removing and installing the release bearing

- Press the catch pegs -arrows- together on the rear side of the clutch release lever and remove the release bearing -A- from the clutch release lever.
- To install, press the release bearing -A- into the clutch release lever until the catch pegs (arrows) lock into position.



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3 Repairing clutch

3.1 Summary of components - Repairing the clutch make "Sachs"

Note

- ◆ Before replacing the clutch disc and pressure plate fault finding power transmission - observe complaints of the clutch and clutch control ⇒ [page 38](#).
- ◆ Replace the clutch discs and pressure plates if the riveting is damaged or loose.
- ◆ Assign the clutch disc and pressure plate in accordance with engine identification characters see ⇒ *Electronic Catalogue of Original Parts*.
- ◆ The two-mass flywheel, pressure plate and clutch disc are assigned to each other and must not be installed together with components from other manufacturers.

1 - The two-mass flywheel

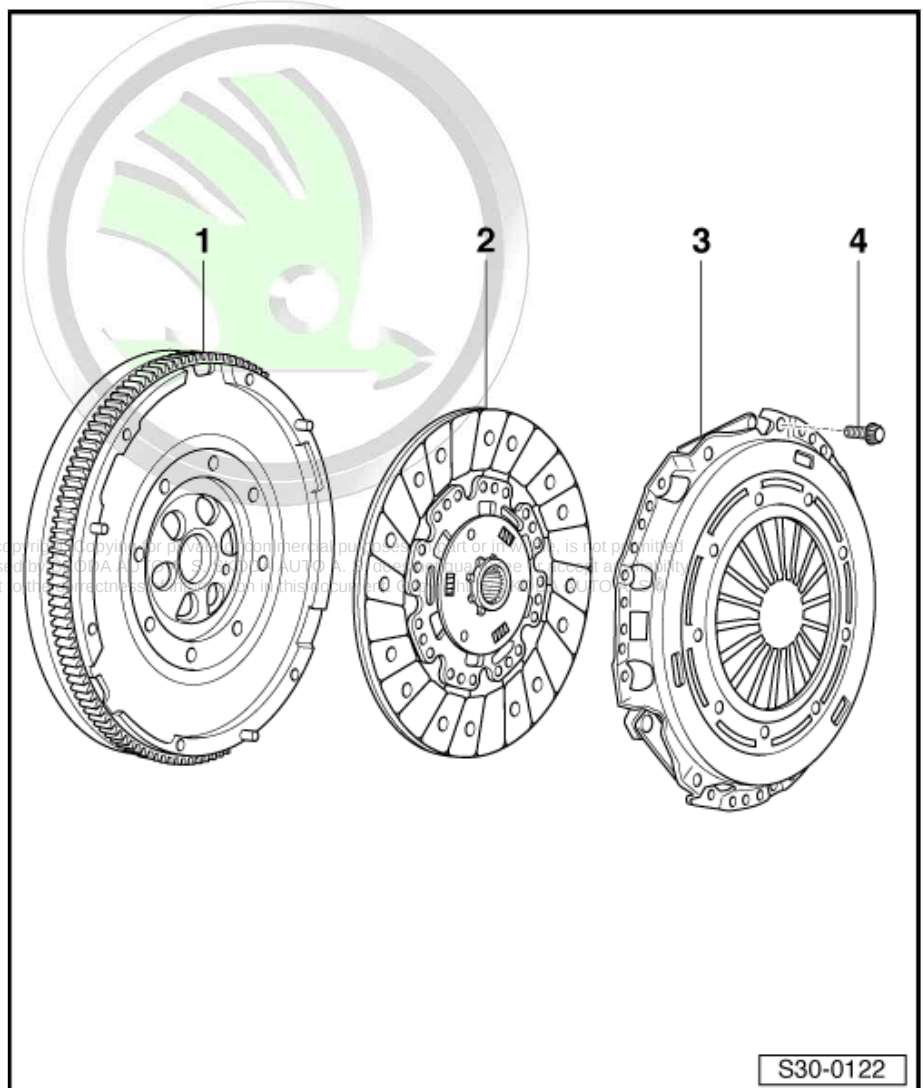
- ☐ make sure the centering pins are correctly fitted
- ☐ The locating face for the clutch lining must be free from grooves, oil and grease
- ☐ Observe removal instructions for two-mass flywheel ⇒ engine ⇒ Rep. Gr. 13
- ☐ removing and installing ⇒ Engine ⇒ Rep. Gr. 13

2 - Clutch disc

- ☐ Assignment ⇒ *Electronic Catalogue of Original Parts*
- ☐ removing and installing ⇒ [page 32](#)
- ☐ must only be replaced together with pressure plate
- ☐ Fitting position ⇒ [page 33](#)

3 - Pressure plate

- ☐ Assignment ⇒ *Electronic Catalogue of Original Parts*
- ☐ with resetting mechanism
- ☐ Distinguishing feature ⇒ [page 33](#)
- ☐ removing and installing ⇒ [page 32](#)



- ☐ Check the extremities of the membrane springs ➔ [page 33](#)
- ☐ Check feather joints and riveted joints ➔ [page 34](#)
- ☐ must be replaced together with clutch disc

4 - Screw M6 - 13 Nm; screw M7 - 20 Nm

- ☐ Assignment ➔ Electronic Catalogue of Original Parts
- ☐ Uniformly loosen crosswise and tighten

3.2 Removing and installing clutch make "Sachs"

Special tools and workshop equipment required

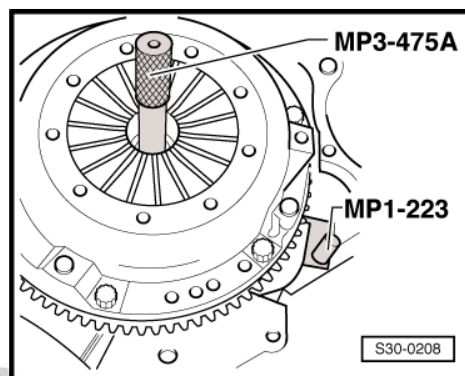
- ◆ Counterholder -MP1-223 (3067)-
- ◆ Centering mandrel -MP3-475A (3190A) -
- ◆ Grease -G 000 100-

3.2.1 Removing

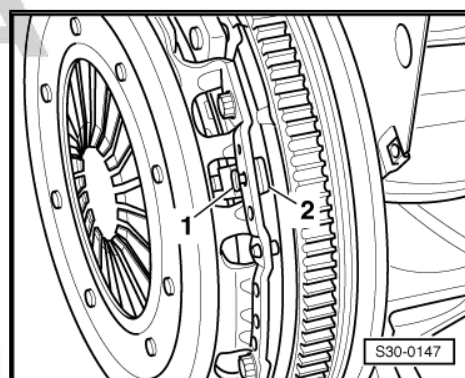
- Removing the gearbox ➔ [page 72](#) .

In order to avoid a deformation of the pressure plate when removing it (this leads to jerking during start-up), the pressure plate must be loosened as follows:

- Insert counterholder -MP1-223 (3067)- to slacken the bolts.



- Release bolts gradually and crosswise.
- When unscrewing, the stop must slacken -2- together with the bolt -1-.
- If the stop does not slacken: Press bolt in the direction of the flywheel.
- Remove pressure plate and clutch disc.



3.2.2 Install

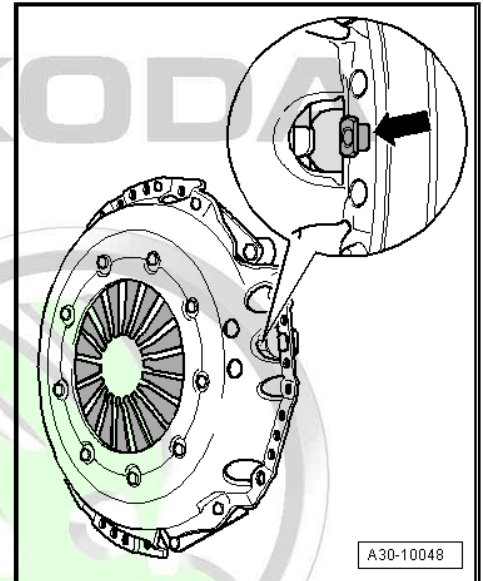
Installation is performed in the reverse order, pay attention to the following points:

i Note

- ◆ Always replace pressure plate and clutch disc together.
- ◆ Assign the pressure plate and clutch disc in accordance with the engine identification characters via the ⇒ Electronic catalogue of original parts .
- ◆ The two-mass flywheel, pressure plate and clutch disc are assigned to each other and must not be installed together with components from other manufacturers.

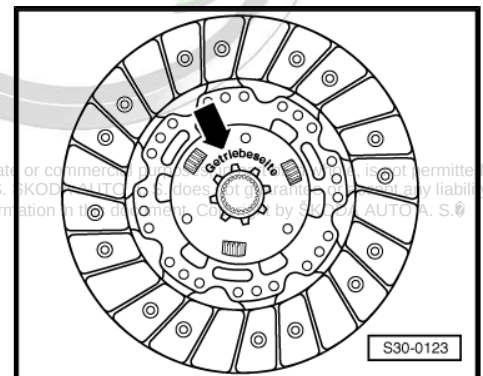
Distinguishing feature self-adjusting clutch type "Sachs"

- ◆ Pressure plate with stop (position sensor) -arrow-.



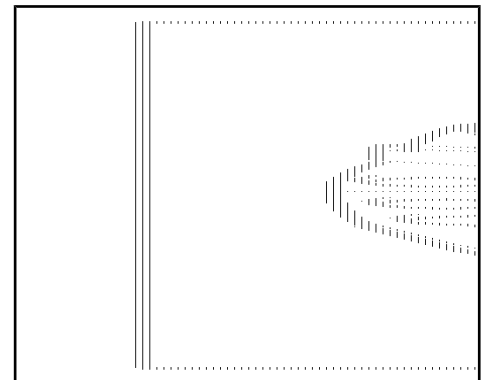
Fitting location of clutch disc

- Legend "side of gearbox" points to the gearbox.



Check the extremities of the membrane springs

- Wear is allowed up to half the membrane spring thickness -arrows-.





Check feather joints and riveted joints

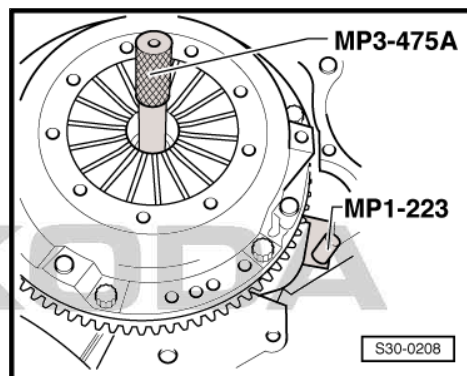
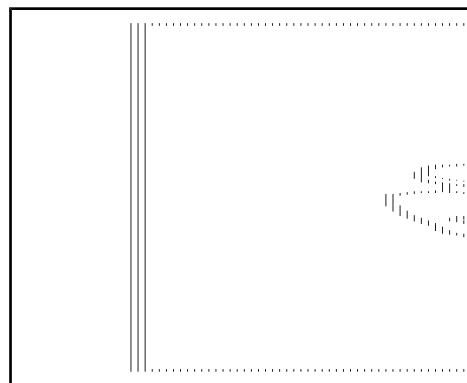
- Check the feather joints between pressure plate and cover for cracks as well as the riveted joints for firm seating.
- Pressure plate with damaged feather joints or with loose riveted joints -arrows- must be replaced.



Note

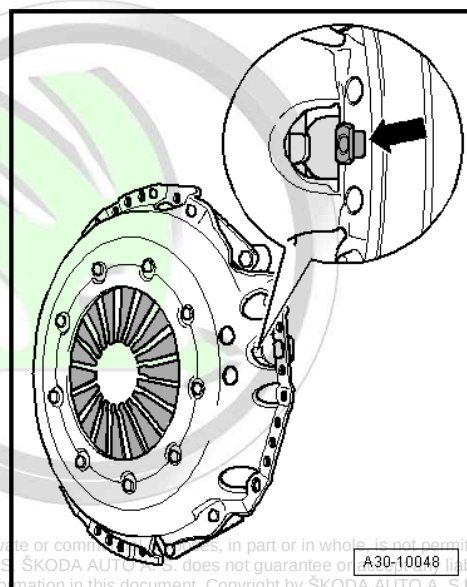
- ◆ *Replace the clutch discs and pressure plates if the riveting is damaged or loose.*
- ◆ *In order to reduce unpleasant odours if the clutch is burnt, thoroughly clean the clutch housing as well as the flywheel and the engine on the side of the gearbox.*
- ◆ *Clean the drive shaft serration and hub serration on used clutch discs, remove corrosion. Apply a very thin layer of grease -G 000 100- onto the serration. Subsequently move the clutch disc up and down on the drive shaft until the hub fits smoothly on the shaft. Remove all excess grease.*
- ◆ *The pressure plates are protected against corrosion and are greased. Only clean the thrust surface as otherwise the life of the clutch may be considerably reduced.*
- ◆ *The thrust surface of the pressure plate and the clutch disc lining must fully rest against the flywheel before the screws are inserted. Only then may the fixing screws be inserted.*

- When installing, re-use the counterholder -MP1-223 (3067)- for tightening the screws.
- Place the pressure plate onto the centering pins.
- Use centering mandrel -MP3-475A (3190A)- for centering the clutch disc.



In order to avoid a deformation of the pressure plate when installing it (this leads to jerking during start-up), the pressure plate must be installed as follows:

- Pay attention that the stop bolt (position sensor) -arrow- can move freely.
- Screw in all the screws by hand uniformly, until the bolt head rests against the pressure plate.
- Tighten the screws gradually and crosswise so as not to damage the centering holes on the pressure plate and the centering pins of the flywheel, while doing so the stop bolt -arrow- must not be lifted up from the pressure plate.
- Tighten all 6 screws gradually to tightening torque
⇒ [page 31](#) .
- Installing the gearbox ⇒ [page 78](#) .



3.3 Summary of components - Repairing the clutch make "LuK"

Note

- ◆ Before replacing the clutch disc and pressure plate fault finding power transmission - observe complaints of the clutch and clutch control ⇒ [page 38](#) .
- ◆ Replace the clutch discs and pressure plates if the riveting is damaged or loose.
- ◆ Assign the clutch disc and pressure plate in accordance with engine identification characters see ⇒ *Electronic Catalogue of Original Parts* .
- ◆ The two-mass flywheel, pressure plate and clutch disc are assigned to each other and must not be installed together with components from other manufacturers.

1 - The two-mass flywheel

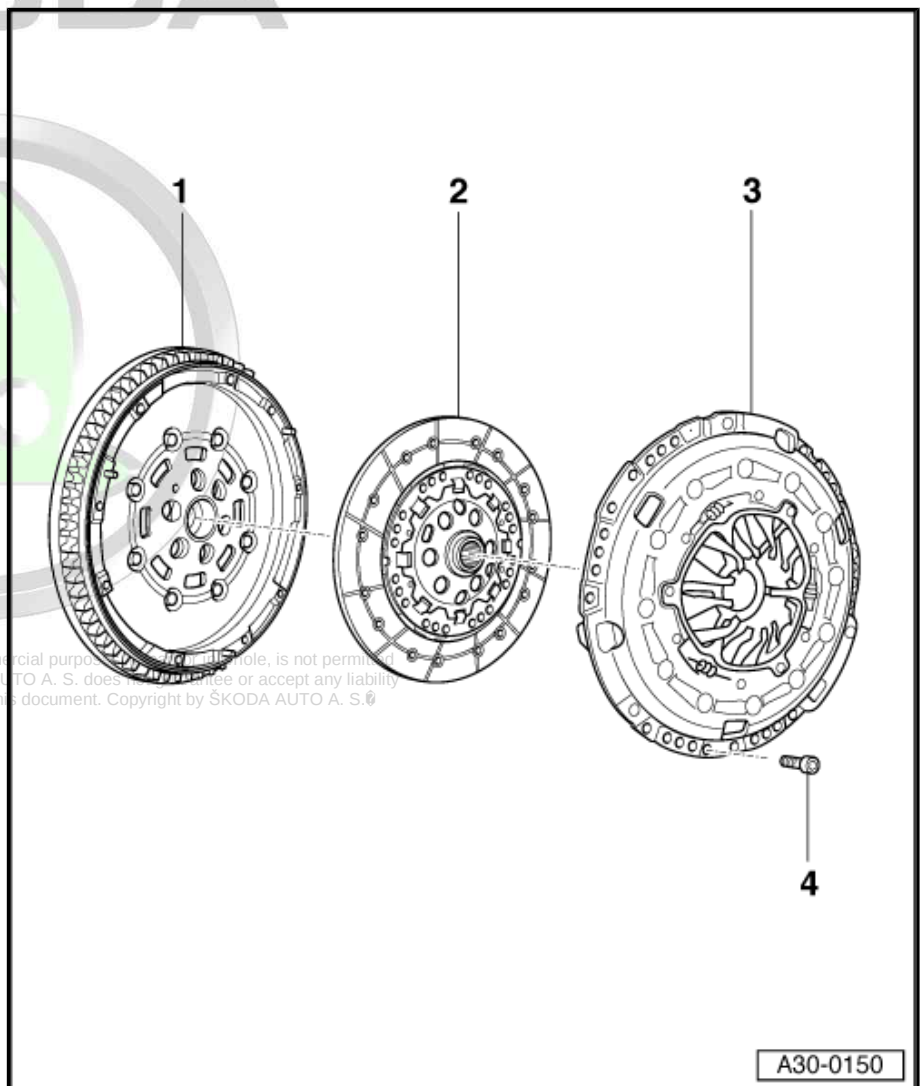
- ☐ make sure the centering pins are correctly fitted
- ☐ The locating face for the clutch lining must be free from grooves, oil and grease
- ☐ Observe removal instructions for two-mass flywheel ⇒ engine ⇒ Rep. Gr. 13
- ☐ removing and installing ⇒ Engine ⇒ Rep. Gr. 13

2 - Clutch disc

- ☐ Assignment ⇒ *Electronic Catalogue of Original Parts*
- ☐ removing and installing ⇒ [page 36](#)
- ☐ must be replaced with "SAC" pressure plate Pos. 3
- ☐ Fitting position ⇒ [page 36](#)

3 - "SAC"-Pressure plate

- ☐ "SAC" is an abbreviation for Self Adjusting Clutch and means "self-adjusting clutch"
- ☐ Assignment ⇒ *Electronic Catalogue of Original Parts*
- ☐ removing and installing ⇒ [page 36](#)
- ☐ Check the extremities of the membrane springs ⇒ [page 37](#)
- ☐ Check feather joints and riveted joints ⇒ [page 37](#)
- ☐ Check position of adjustment mechanism on new pressure plates ⇒ [page 37](#)
- ☐ must be replaced with clutch disc Pos. 2



4 - Screw M6 - 13 Nm; screw M7 - 20 Nm

- ☐ release or tighten in small stages crosswise
- ☐ Assignment ⇒ Electronic Catalogue of Original Parts

3.4 Removing and installing clutch make "LuK"

Special tools and workshop equipment required

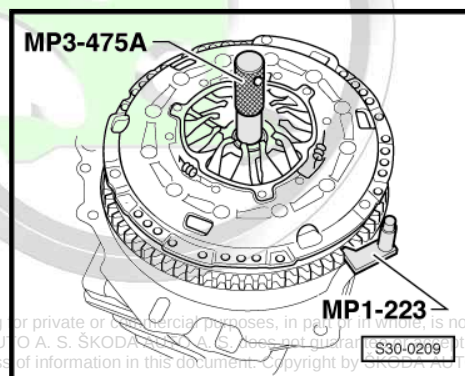
- ◆ Counterholder -MP1-223 (3067)-
- ◆ Centering mandrel -MP3-475A (3190A) -
- ◆ Grease -G 000 100-

3.4.1 Removing

- Removing the gearbox ⇒ [page 72](#) .

In order to avoid a deformation of the pressure plate when removing it (this leads to jerking during start-up), the pressure plate must be loosened as follows:

- Insert counterholder -MP1-223 (3067)- to slacken the bolts.
- Release bolts gradually and crosswise.
- Remove pressure plate and clutch disc.



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3.4.2 Install

Installation is performed in the reverse order, pay attention to the following points:

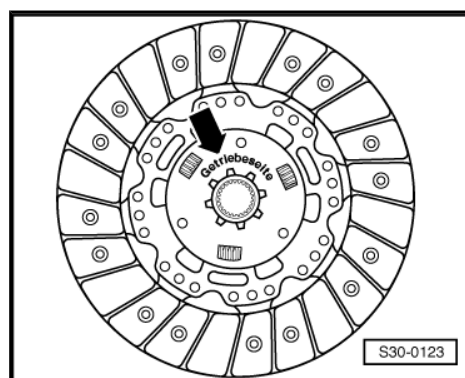


Note

- ◆ Always replace pressure plate and clutch disc together.
- ◆ Assign the pressure plate and clutch disc in accordance with the engine identification characters via the ⇒ Electronic catalogue of original parts .

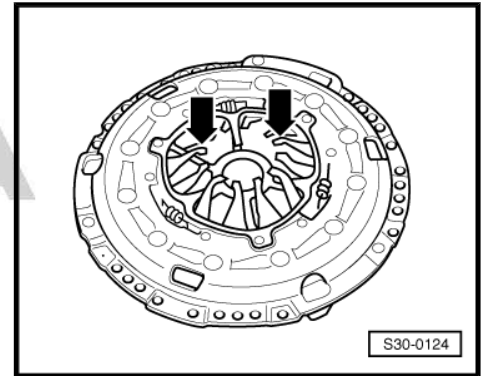
Fitting location of clutch disc

- Logo "gearbox side" points to the gearbox.



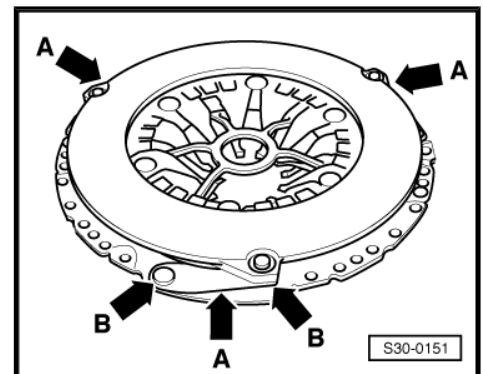
Check the extremities of the membrane springs

- Wear is allowed up to half the membrane spring thickness -arrows-.



Check feather joints and riveted joints

- Check feather joints -arrows A- for damage as well as riveted joints -arrows B- for firm seating.



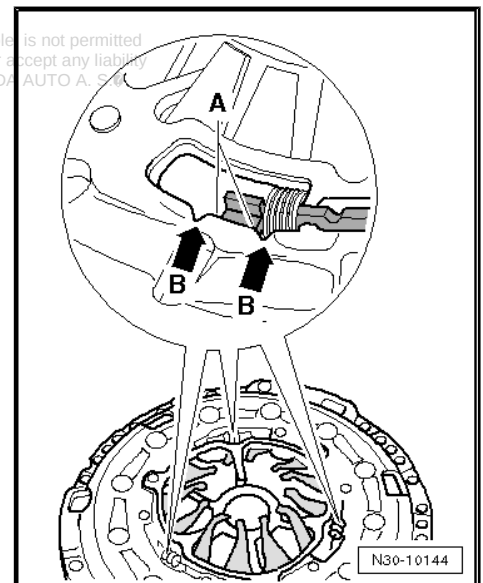
Check position of adjustment mechanism on new pressure plates

- ◆ Both edges -A- of the adjusting ring must be located between the pair of notches -B-.
- ◆ If the adjusting ring of the new pressure plate is located at a different position, the pressure plate with the clutch disc must not be installed.
- ◆ On used clutches the adjusting ring may also be located at a different position outside the notches.



Note

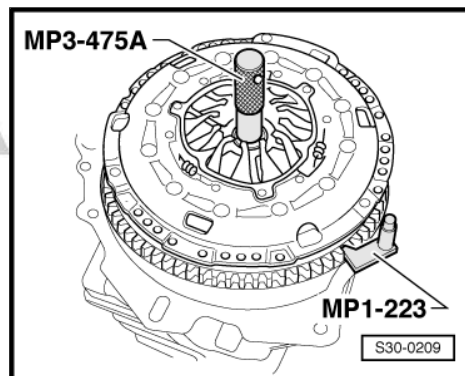
- ◆ Replace the clutch discs and pressure plates if the riveting is damaged or loose.
- ◆ In order to reduce unpleasant odours if the clutch is burnt, thoroughly clean the clutch housing as well as the flywheel and the engine on the side of the gearbox.
- ◆ Clean the drive shaft serration and hub serration on used clutch discs, remove corrosion. Apply a very thin layer of grease -G 000 100- onto the serration. Subsequently move the clutch disc up and down on the drive shaft until the hub fits smoothly on the shaft. Remove all excess grease.
- ◆ The pressure plates are protected against corrosion and are greased. Only clean the thrust surface as otherwise the life of the clutch may be considerably reduced.
- ◆ The thrust surface of the pressure plate and the clutch disc lining must fully rest against the flywheel before the screws are inserted. Only then may the fixing screws be inserted.



- When installing, re-use the counterholder -MP1-223 (3067)- for tightening the screws.
- Place the pressure plate onto the centering pins.
- Use the centering mandrel -MP3-475A (3190A)- for centering the clutch disc.

In order to avoid a deformation of the pressure plate when installing it (this leads to jerking during start-up), the pressure plate must be installed as follows:

- Screw in all the screws by hand uniformly, until the bolt head rests against the pressure plate.
- Tighten the screws gradually and crosswise so as not to damage the centering holes on the pressure plate and the centering pins of the flywheel.
- Tighten all 6 screws gradually to tightening torque.
⇒ [page 35](#)
- Installing the gearbox ⇒ [page 78](#) .



3.5 Fault finding power transmission - problems with the clutch and clutch control



Note

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Check hydraulic clutch control ⇒ [page 23](#) .

Always check the fault mentioned by the customer first before repairing the clutch. During this procedure, it must be determined if indeed there is a fault of the clutch or if the cause is only an incorrect setting of the shift mechanism.

Fault	Fault type	Measure
Clutch pedal does not return to initial position.	♦ Air in line system.	– Vent air from the line system; top up with brake fluid.
	♦ Line system, master cylinder or slave cylinder leaking.	– Replace defective component, vent air from the line system; top up with brake fluid.
	♦ Release bearing is tilted on the guide bushing, seized.	– Replace guide bushing and release bearing.
	♦ Bent membrane spring of the pressure plate.	– Replace pressure plate.

Complaint	Fault description	Measure
Great force must be applied when the clutch is released.	♦ Over-centre helper spring defective.	– Replace over-centre helper spring.
	♦ The clutch release force has increased through the wear of the clutch lining.	– The customer must be informed that the clutch release force increases with increased wear. – Replace the clutch disc if the distance base of the rivet is below 0.1 mm.
	♦ Release bearing is tilted on the guide bushing, seized.	– Replace defective parts.



Complaint	Fault description	Measure
	♦ The springs of the pressure plate do not present any correct characteristic.	– Use the ⇒ Electronic Catalogue of Original Parts for the assignment of the pressure plate.
	♦ Mechanical fault at the pressure plate or the clutch disc.	– Replace defective parts.
	♦ After the serration, the clutch disc moves with difficulty or jams.	– Check the hub for damage (burrs), if necessary replace clutch disc. – Clean the hub and the drive shaft from corrosion and residues of lubricant and grease with grease for plug serration of clutch disc -G 000 100-. Move clutch disc back and forth, remove excess grease.

Complaint	Fault description	Measure
Clutch control noises.	♦ Release bearing defective, clutch release bearing is not O.K, contact surface drained off.	– Always replace noisy release bearing. – Replace damaged guide bushings.
	♦ Contact surface of the pressure plate defective (tips of membrane spring bent, broken). The release bearing is not positioned in the centre.	– Replace pressure plate. – Check release bearing and guide bushing, replace if necessary. – Check position of clutch release lever. – Check dowel sleeves.
	♦ Centering engine and gearbox.	– Check dowel sleeves.
	♦ Clutch disk incorrectly mounted.	– Correct the fitting.
	♦ Wrong clutch disc installed.	– Use the ⇒ Electronic Catalogue of Original Parts for the assignment of the clutch disc.

Complaint	Fault description	Measure
Rattling, scratching occurs when the forward or reverse gear is engaged, gears shift jams, is sluggish, shifting is not possible, clutch without operation.	♦ Air in the system, clutch does not separate fully.	– Check and bleed system, top up with brake fluid.
	♦ Master cylinder or slave cylinder is leaking, line is leaking.	– Replace defective component, top up with brake fluid, vent air from the system.
	♦ The travel of the pedal is not sufficient (carpet, foot mat under the foot controls), foot controls are not fully depressed.	– It must be explained to the customer.

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Complaint	Fault description	Measure
	♦ The pressure plate is bent due to incorrect installation, the clutch disc is deformed due improper handling.	– Check components, if necessary replace, make sure the centering pins are correctly fitted. – If scratching still occurs after the drive shaft serration, check the clutch disc for smooth running, if necessary repair the gearbox.
	♦ Tips of membrane spring bent, kinked (incorrect assembly, release bearing does not run in the centre).	– Replace pressure plate. – Check release bearing and guide bushing, replace if necessary. – Check dowel sleeves.
	♦ Clutch disc too thick.	– Use the ⇒ Electronic Catalogue of Original Parts for the assignment of the clutch disc.
	♦ Deposit adhering to the flywheel (long immobilization time, high humidity).	– Slightly rub down the friction surfaces of the clutch lining, if necessary when corrosion occurs in a larger area, replace the component completely.
	♦ After the serration, the clutch disc moves with difficulty or jams. Corrosion on the hub, damage during the assembly. Knock out the hub profile on one side.	– Check the hub for damage, if necessary replace the clutch disc. – Remove corrosion from the hub and the shaft as well as residues of lubricant. Grease shaft with grease for plug serration of clutch disc -G 000 100- . – Move clutch disc back and forth, remove excess grease. – Check the position of the dowel sleeves when the hub profile is knocked out. – Check release bearing, guide bushing and pressure plate, replace if necessary.
	♦ The stroke of the pressure plate is too low (wrong pressure plate installed).	– Use the ⇒ Electronic Catalogue of Original Parts for the assignment of the pressure plate.
	♦ The displacement of the engine to the gearbox is too large (dowel sleeves are missing), for this reason the clutch disc support plate has bent.	– Before installing the gearbox, insert the dowel sleeves. – Check clutch disc and pressure plate for damage, if necessary replace.
	♦ Lining spalled off because of too high revs (shift back into lower gears during high speeds).	– Replace clutch disc. It must be explained to the customer.
	♦ Spalled off lining due to long slip of torque when starting.	



Complaint	Fault description	Measure
Load alteration shocks when pushing the accelerator pedal down sharply and when the engine speed drops suddenly.	◆ Assembly bearing is too soft.	– It must be explained to the customer. Use the ⇒ Electronic Catalogue of Original Parts for the assignment of the hanger.
	◆ Irregular engine running.	– Check engine power, correct.
	◆ Clutch disc with noise insulation of the loose wheels.	– It must be explained to the customer.
	◆ Centering engine and gearbox.	– Test dowel sleeves, replace if necessary.

Complaint	Fault description	Measure
The clutch slips through, no or poor pulling power.	◆ Wrong clutch disc fitted, wrong pressure plate installed.	– Use the ⇒ Electronic Catalogue of Original Parts for the assignment of the clutch disc and the pressure plate.
	◆ Clutch disc worn out, burnt, pressure plate overheated, grooves, pressure plate deformed through incorrect assembly, compressive force of the pressure plate too low, driving error, natural wear.	– Replace clutch disc. – Replace pressure plate. – It must be explained to the customer.
	◆ Clutch disc, pressure plate, flywheel - oily. Radial shaft seal of the engine or the gearbox defective. Grease on the contact surface through excess greasing of the hub.	– Replace clutch disc. – Clean contact surfaces of pressure plate and flywheel. – Replace radial shaft seal, remove excess grease from the drive shaft.
	◆ Clutch disc installed the wrong way up.	– Correct the fitting, check clutch disc, replace if necessary.
	◆ Flywheel depth too large or excessive abrasion on the contact surface of the lining.	– Use the ⇒ Electronic Catalogue of Original Parts for the assignment of the flywheel. – Inspect clutch disc and pressure plate, replace if necessary.
	◆ Slave cylinder leaking.	– Replace slave cylinder.

Complaint	Fault description	Measure
Clutch jerks, assembly knocks.	◆ Air in the system.	– Bleed system, check brake fluid level, check system for tightness. – Replace defective part.
	◆ Engine does not run clean.	– Check engine power, correct.
	◆ Driving error, speed too low when starting.	– It must be explained to the customer.
	◆ Wrong clutch disc installed.	– Use the ⇒ Electronic Catalogue of Original Parts for the assignment of the clutch disc.

Complaint	Fault description	Measure
	◆ Assembly bearing too soft, knocked out.	– Use the ⇒ Electronic Catalogue of Original Parts for the assignment of the assembly bearing.
	◆ Clutch lining oily, contact surface of pressure plate and flywheel oily (oil leakage from the clutch housing).	– Check radial shaft seal of the drive shaft for clutch or check crankshaft, if necessary replace. – Replace clutch disc, clean pressure plate and flywheel.
	◆ Release bearing is tilted on the guide bushing (seized) (presses partially on the membrane spring of the pressure plate).	– Replace release bearing and guide bushing. – Check control elements and bearing of control elements.
	◆ The contact surface of the pressure plate only has the hub on one side due to the tilted release bearing. ◆ Pressure plate housing deformed when installed. The contact surface of the pressure plate only has the hub on one side.	– Check the contact surface of the clutch lining on the flywheel, check pressure plate and membrane springs, replace pressure plate if necessary. – Replace release bearing and guide bushing.
	◆ Drive shaft too heavily greased (traces of grease on the clutch disc, pressure plate and flywheel).	– Clean pressure plate and flywheel free of grease, replace in the event of damage (traces of friction, heat dissipation, grooves). – Remove traces of grease from hub and shaft, grease shaft lightly with grease for plug serration of clutch disc - G 000 100- . – Move clutch disc back and forth, remove excess grease.

Complaint	Fault description	Measure
Acoustic load alteration shock "clicking" when clutch is released.	◆ Acceleration is assigned to the load carrier/drive shaft through the sudden press of the clutch pedal. The drive shaft serration of the pinions in mesh knocks, this noise is increased for clutch discs with noise insulation as the damping reaches the stop.	– It must be explained to the customer.

Complaint	Fault description	Measure
Noises in idle.	◆ Torsional damper spring kinked.	– Replace clutch disc.
	◆ Clutch disc fitted without damping (rattles in idle).	– Assign clutch disc via the ⇒ Electronic catalogue of original parts .



Complaint	Fault description	Measure
	◆ Pressure plate deformed, imbalance.	– Replace pressure plate.
	◆ Irregular engine running.	– Check engine power, correct if necessary.
	◆ The displacement of the engine to the gearbox is too large (dowel sleeves are missing).	– Before installing the gearbox, insert the dowel sleeves.
	◆ Intermediate plate rubs on the flywheel.	– Insert intermediate plate on sealing flange and push onto the dowel sleeves.



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34 – Control, housing

1 Repairing shift mechanism

1.1 Fitting location of shift mechanism

-Arrow A- Shift movement

-Arrow B- Selector movement

A - Shift cable

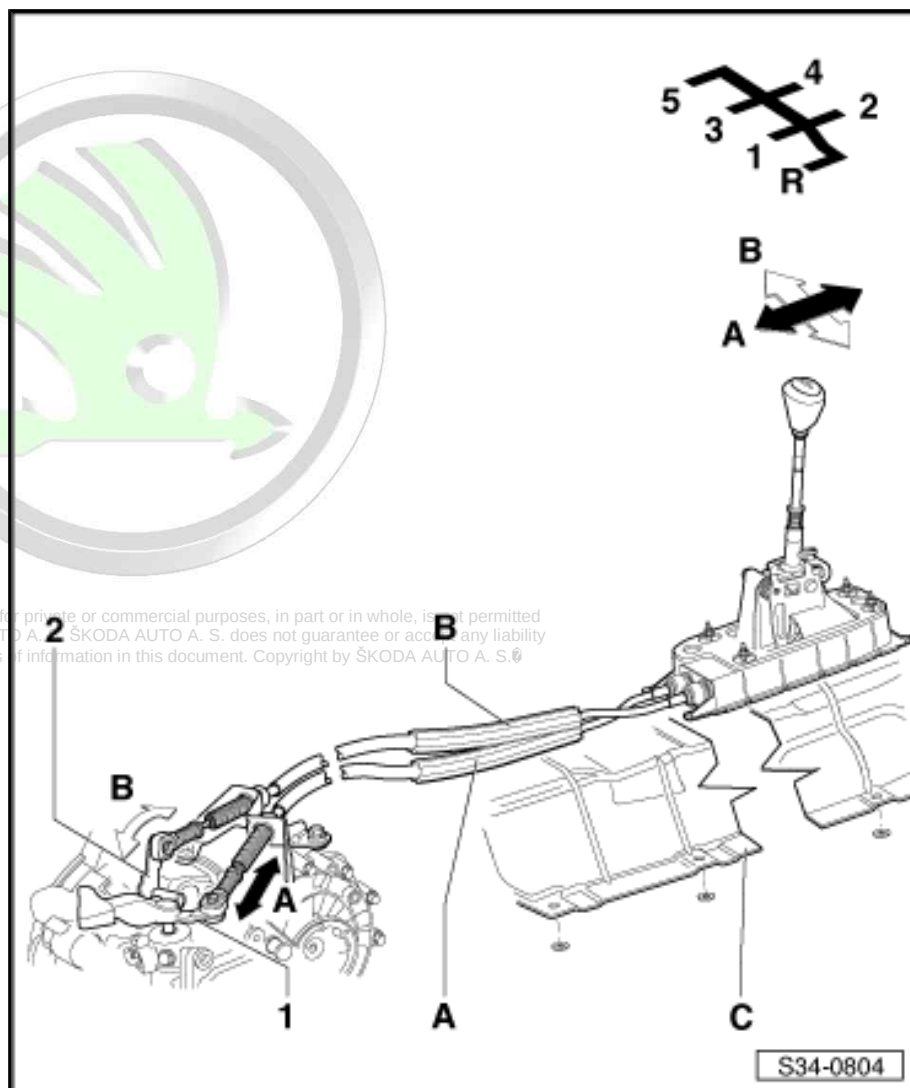
B - Selector cable

C - Heat shield

- ☐ take off before removing the shift mechanism

1 - Gearshift lever

2 - Reversing lever



1.2 Summary of components



Note

- ◆ After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ *Electrical System* ⇒ *Rep. Gr. 27*.
- ◆ Remove shift mechanism for replacing control cables ⇒ [page 63](#).
- ◆ Do not kink the control cables.

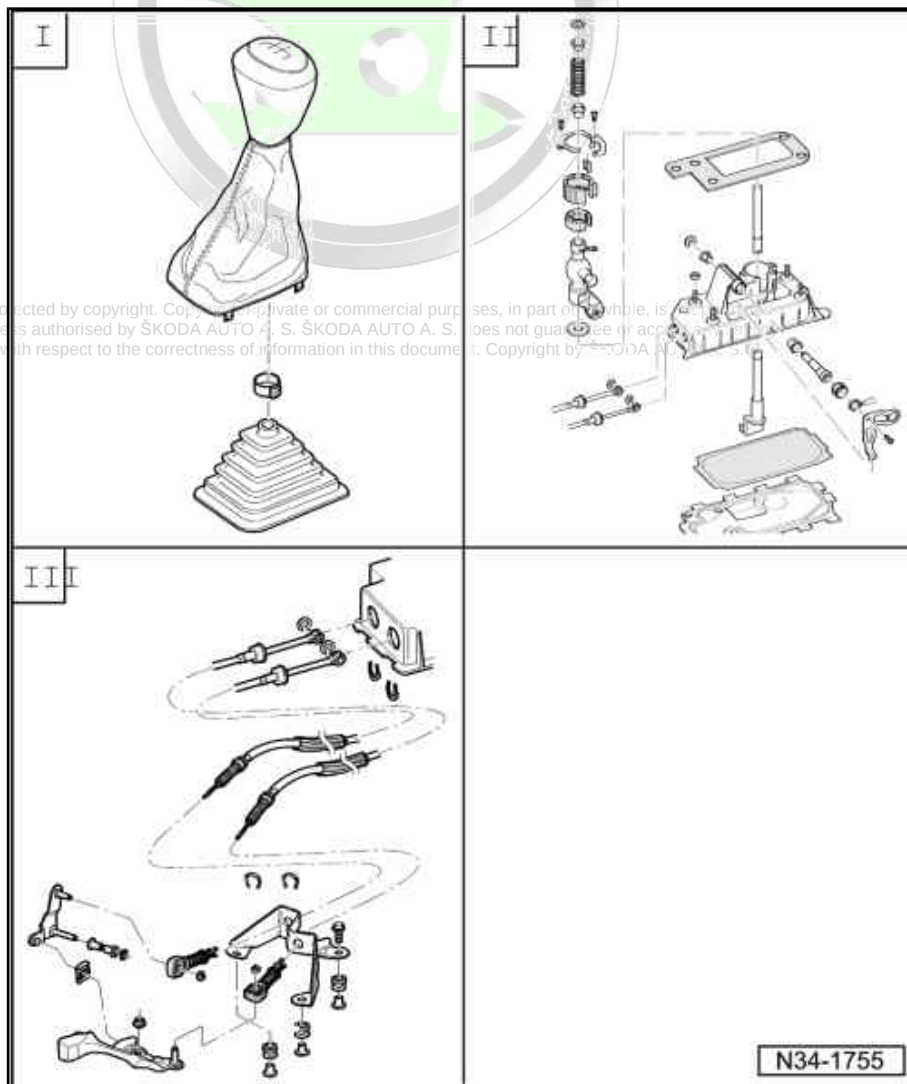
I - Summary of components -
Gearshift knob with shift lever
collar ⇒ [page 46](#)

II - Summary of components -
Gearshift mechanism up to
10.06 ⇒ [page 47](#)

II - Summary of components -
Gearshift mechanism as of
11.06 ⇒ [page 49](#)

III - Summary of components -
Control cables up to 10.06
⇒ [page 55](#)

III - Summary of components -
Control cables as of 11.06
⇒ [page 59](#)



1.3 Summary of components - Gearshift knob with shift lever collar

1 - Gearshift knob

- ☐ with collar
- ☐ The gearshift knob and collar can be separated from each other (when separating, the circlip is damaged)
- ☐ removing and installing
⇒ [page 46](#)
- ☐ Plaque of gearshift lever can only be separated from the gearshift knob e.g. with a screwdriver.
- ☐ Assignment ⇒ Electronic Catalogue of Original Parts

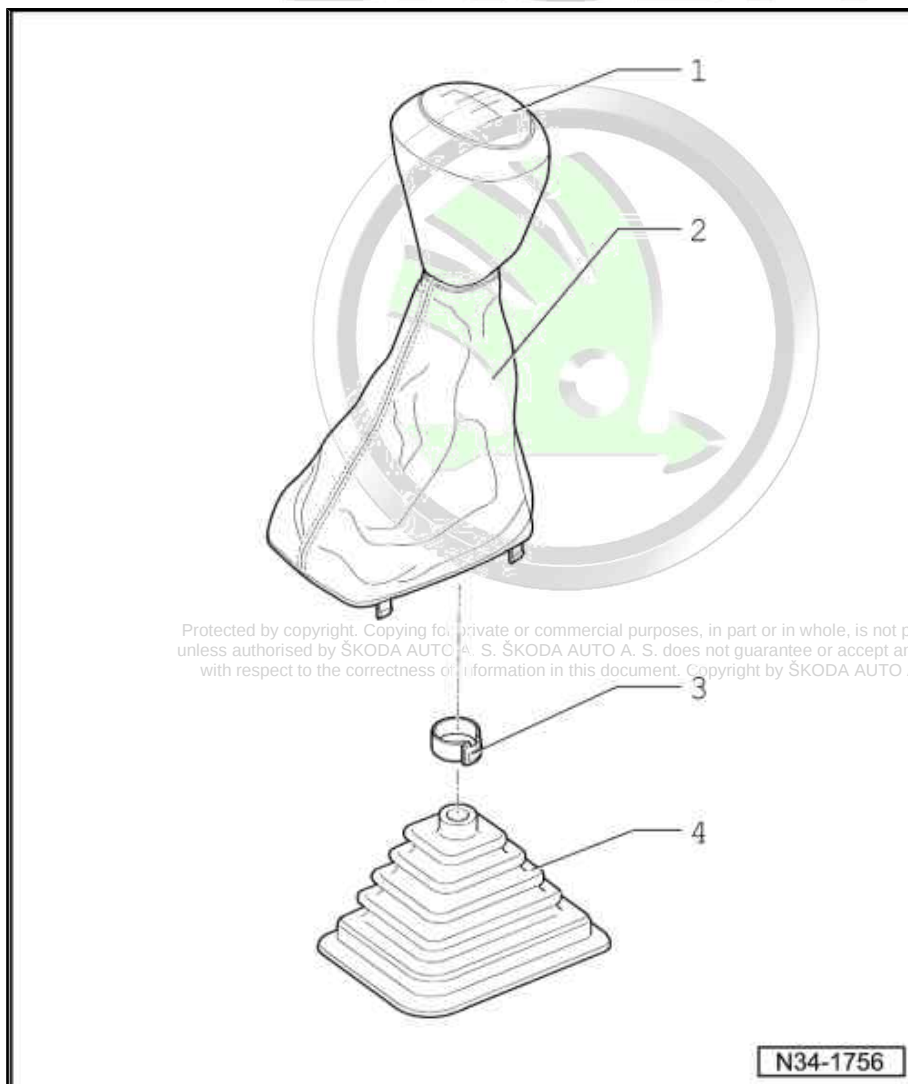
2 - Collar

3 - Open worm-type clamp

- ☐ for securing the gearshift knob to the gearshift lever
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

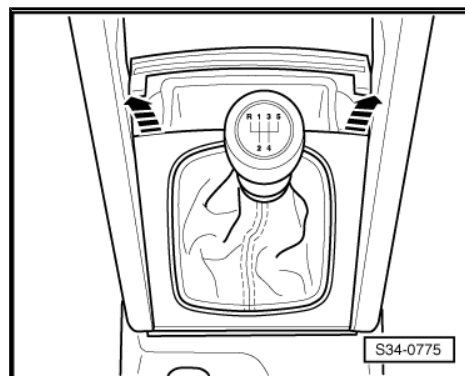
4 - Noise insulation

- ☐ not fitted to all vehicles
- ☐ Catch pegs are positioned at different distances.
- ☐ therefore can only be inserted in one position.



1.4 Removing and installing gearshift knob and shift lever collar

- Lever the collar upwards and out of centre console cover -arrows-.
- Pull the collar upwards over the gearshift knob.



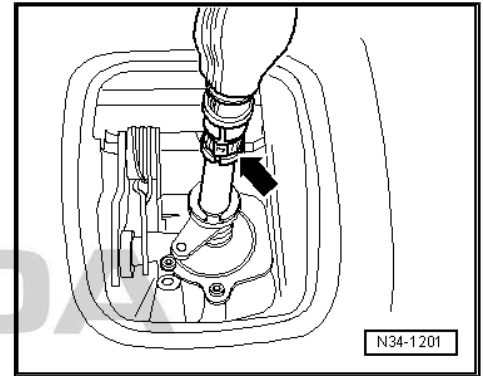


- Open clamp -arrow- and pull off gearshift knob together with the collar.

Install

- Turn collar inside out.
- Insert gearshift knob and collar and compress new collar clamp -arrow-.

When inserting the gearshift knob on the shift lever the gearshift knob must lock into the round slot of the gearshift lever.



1.5 Summary of components - Gearshift mechanism up to 10.06



Note

Grease all bearing and contact surfaces with grease -G 000 450 02-.

1 - Floor plate

- ☐ bend up tabs for removing
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

2 - Gasket

- ☐ always replace ⇒ Electronic Catalogue of Original Parts

3 - Shift lever

4 - O-ring

- ☐ in case of damage replace ⇒ Electronic Catalogue of Original Parts

5 - Securing clip

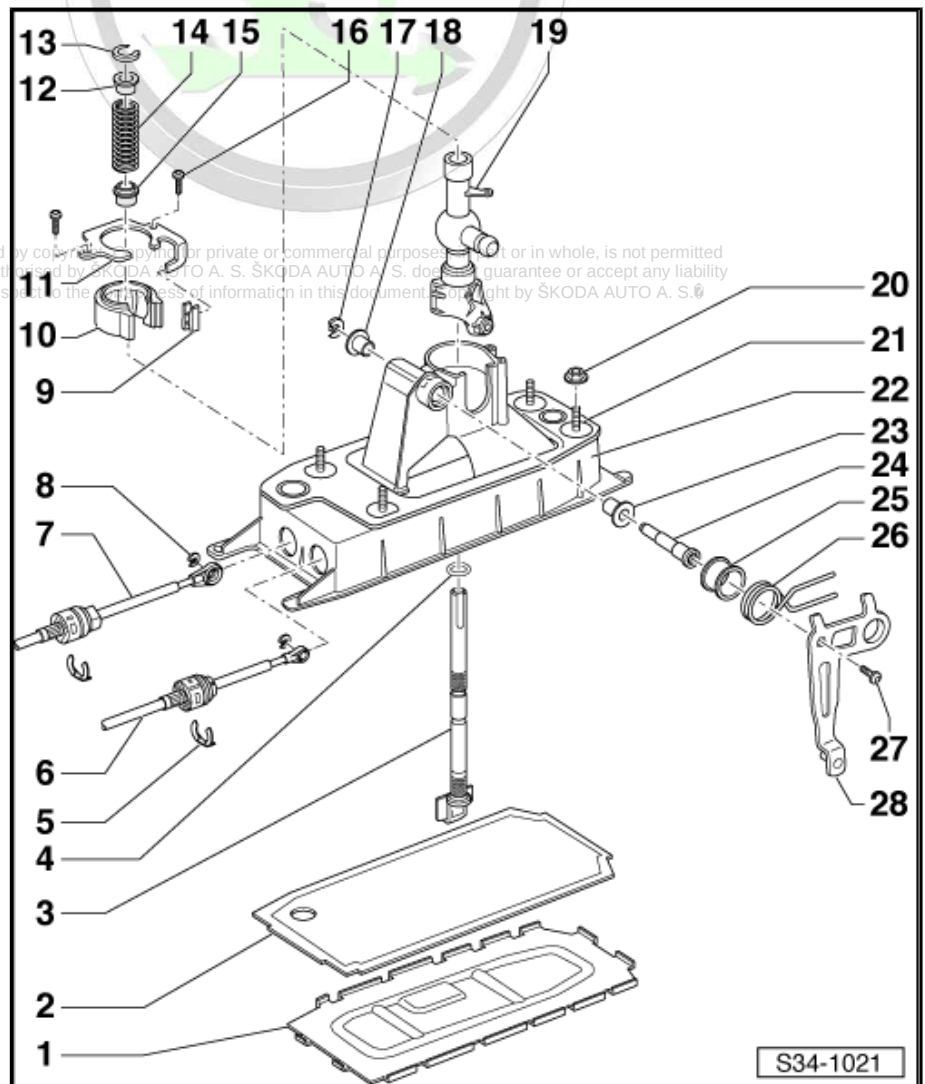
- ☐ do not damage cables when removing
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

6 - Selector cable

- ☐ removing and installing ⇒ [page 67](#)
- ☐ Fitting position ⇒ [page 44](#)
- ☐ adjust ⇒ [page 69](#)

7 - Shift cable

- ☐ removing and installing ⇒ [page 67](#)
- ☐ Fitting position ⇒ [page 44](#)





- ☐ adjust ⇒ [page 69](#)

8 - Circlip

- ☐ always replace ⇒ Electronic Catalogue of Original Parts

9 - Damper

- ☐ for pressure spring Pos. 26

10 - Bearing shell**11 - Cover****12 - Bush****13 - Lock washer**

- ☐ removing and installing ⇒ [page 49](#)

14 - Pressure spring

- ☐ removing and installing ⇒ [page 49](#)

15 - Bush**16 - 5 Nm****17 - Circlip**

- ☐ always replace ⇒ Electronic Catalogue of Original Parts

18 - Bushing**19 - Shift lever guide****20 - Nut M8 - 25 Nm, Nut M6 - 8 Nm****21 - Gasket**

- ☐ between shift housing and underbody
- ☐ self-adhesive

22 - Shift housing**23 - Bushing****24 - Bearing bolt****25 - Guide bushing**

- ☐ push onto shift housing

26 - Pressure spring

- ☐ installing ⇒ [page 49](#)

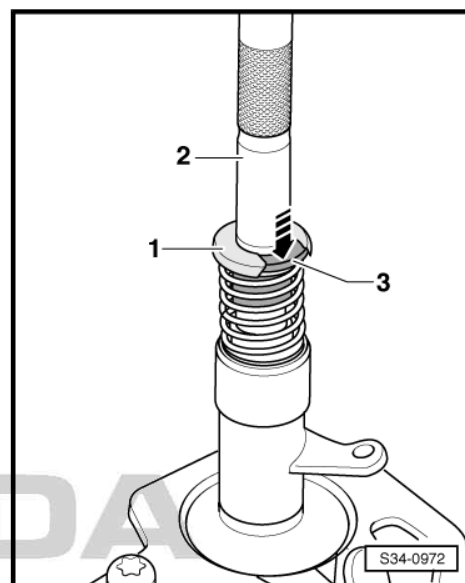
27 - 5 Nm**28 - Selector angle plate**

ŠKODA



Removing and installing lock washer

- Hold the gearshift lever -2-.
- Press spacer sleeve -3- in direction of arrow.
- Remove lock washer -1-.



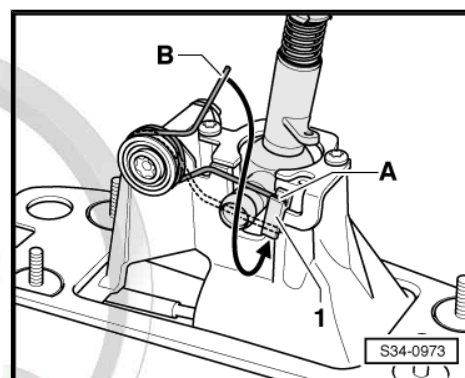
Install pressure spring

- Insert the clamp -A- of the pressure spring from the top into the guide -1-.
- Press the clamp -B- of the pressure spring downwards and insert from the bottom into the guide.



Note

The illustration shows without the removed selector angle plate.



1.6 Summary of components - Gearshift mechanism as of 11.06



Note

Grease all bearing and contact surfaces with grease -G 000 450

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1 - Floor plate

- ☐ bend up tabs for removing
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

2 - Gasket

- ☐ always replace ⇒ Electronic Catalogue of Original Parts

3 - Shift lever

4 - O-ring

- ☐ insert onto gearshift lever -arrow- up to the stop
- ☐ in case of damage replace ⇒ Electronic Catalogue of Original Parts

5 - Securing clip

- ☐ do not damage cables when removing
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

6 - Selector cable

- ☐ removing and installing ⇒ [page 67](#)
- ☐ Fitting position ⇒ [page 44](#)
- ☐ adjust ⇒ [page 69](#)

7 - Bush for selector cable

8 - Shift cable

- ☐ removing and installing ⇒ [page 67](#)
- ☐ Fitting position ⇒ [page 44](#)
- ☐ adjust ⇒ [page 69](#)

9 - Damper

- ☐ removing and installing ⇒ [page 51](#)

10 - Bearing shell

- ☐ removing and installing ⇒ [page 51](#)
- ☐ when removing, the catches of the bearing shell are usually damaged
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

11 - Bush

12 - Lock washer

- ☐ removing and installing ⇒ [page 49](#)

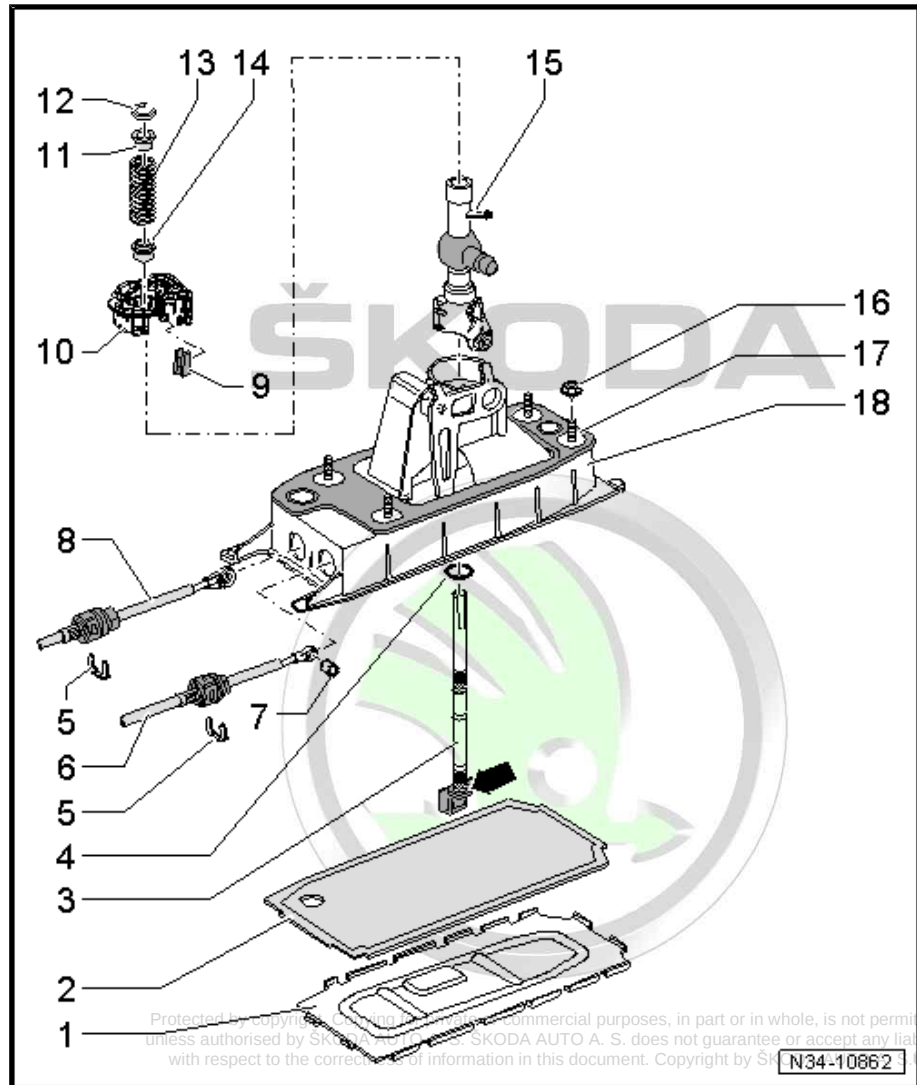
13 - Pressure spring

- ☐ removing and installing ⇒ [page 49](#)

14 - Bush

15 - Shift lever guide

- ☐ removing and installing ⇒ [page 51](#)





16 - Nut M8 - 25 Nm, Nut M6 - 8 Nm

17 - Gasket

- ☐ between shift housing and underbody
- ☐ self-adhesive

18 - Shift housing

- ☐ with pressure spring and selector angle
- ☐ Pressure spring as well as selector angle cannot be removed

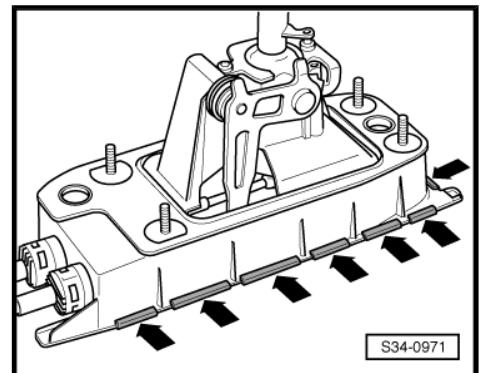
1.7 Disassembling and assembling the gearshift mechanism as of 11.06

Special tools and workshop equipment required

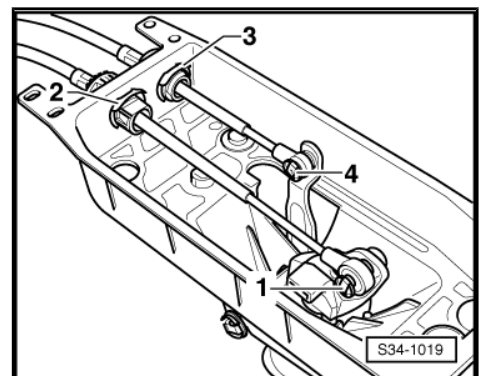
- ◆ Insert base -T10083-
- ◆ Grease -G 000 450 02-

1.7.1 Dismantling

- Remove shift mechanism. ⇒ [page 63](#)
- Bend up tabs -arrows- of cover for the shift mechanism using a screwdriver and remove cover.
- Remove gasket ring.



- Remove lock washers -2 and 3- (lock washers -1 and 4- are no longer available), selector cable and shift cable must be levered off from the shift lever or selector lever e.g. with a screwdriver.

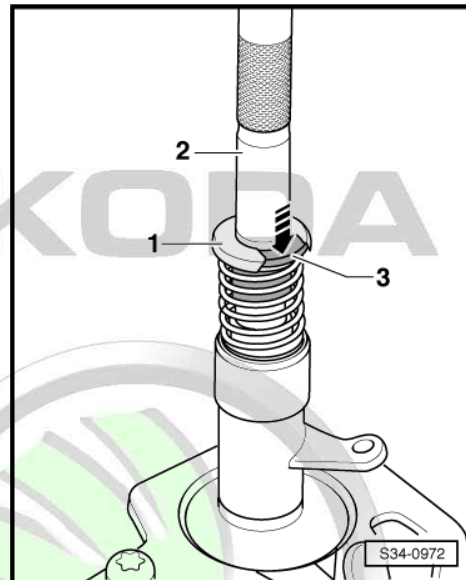


- Remove shift lever.

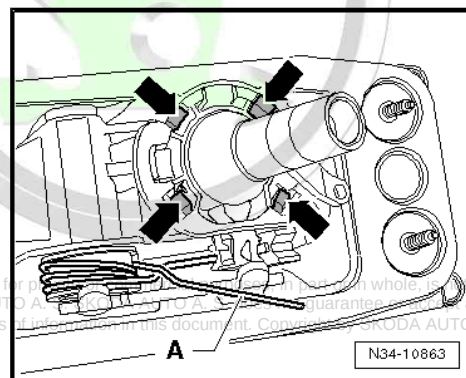


Note

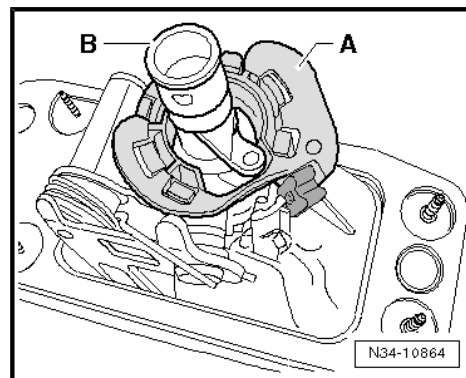
- ◆ Hold the gearshift lever -2-.
- ◆ Press spacer sleeve -3- in direction of arrow.
- ◆ Remove lock washer -1-.



- Offset the top pressure spring arm -A- via the peg of the selector angle.
- Press the catches of the bearing shell -arrows- e.g. with a screwdriver in -direction of arrow- (the catch can break off).



- Slacken bearing shell -A- and shift lever guide -B- from shift housing.
- Remove bearing shell -A- from shift lever guide -B-.



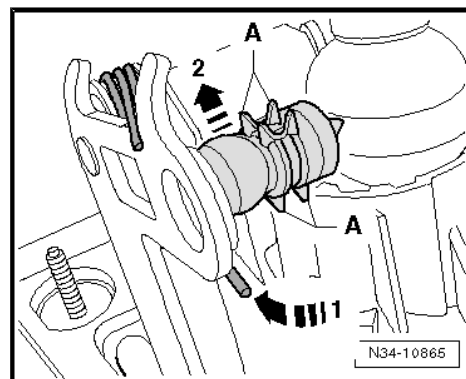
- Press bottom pressure spring arm -arrow 1- onto shoulder of selector angle.



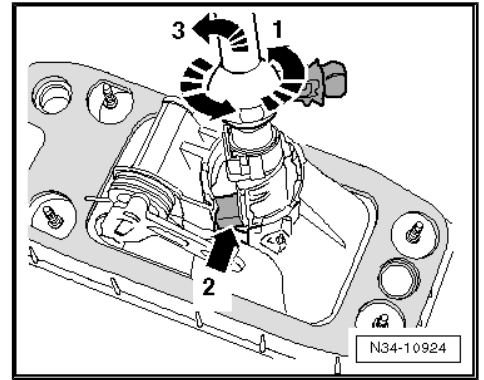
Note

When removing the shift lever guide, the guides -A- must not be damaged.

- Lever the lower leg of the pressure spring up to the stop onto the shoulder at the selector angle plate -direction of arrow 1-.
- Now pull up the shift lever guide as far as the stop and pull the ball stud out of the selector angle plate -direction of arrow 2-.



- Then turn the shift lever guide in -direction of arrow 1-.
- The stud -arrow 2- must be located in the recess of the shift housing.
- Afterwards, swivel out the shift lever guide with shift lever in -direction of arrow 3-.



1.7.2 Assembling together



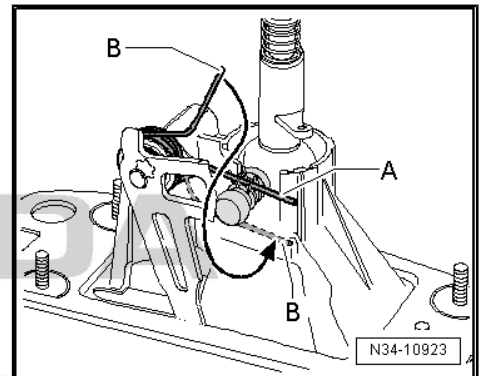
Caution

The lower leg of the pressure spring (⇒ page 52) can jump off uncontrolled from the shoulder of the selector angle during further handling.

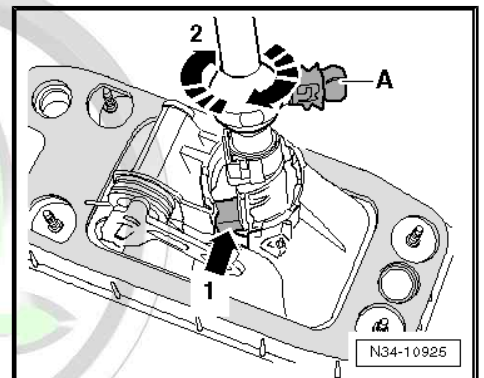
- Thus carefully press down the lower leg from the shoulder of the selector angle plate.

The legs of the pressure spring tighten “crosswise” with a loud noise

- To slacken, turn around the legs of the pressure spring -A- and -B- towards the right.
- The legs -A- and -B- must point in the opposite direction. Shown here for inserted shift lever guide.



- Insert shift lever guide with shift lever into the shift housing.
- The stud -arrow 1- is still located in the recess of the shift housing.
- Turn shift lever guide in -direction of arrow 2-, until the ball stud -A- is above the recess of the shift housing.

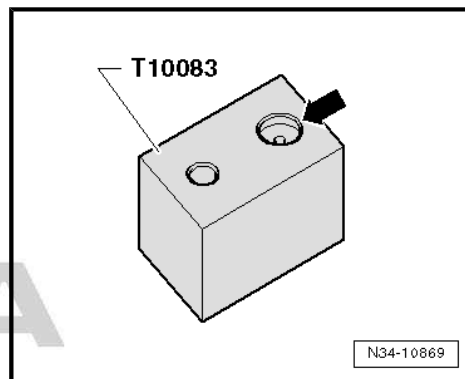


- Position shift housing with shift lever guide into the larger recess -arrow- of the Insert base -T10083- .



Note

If necessary, first of all remove the shift lever so that the shift housing with shift lever guide can be inserted in the insert base .

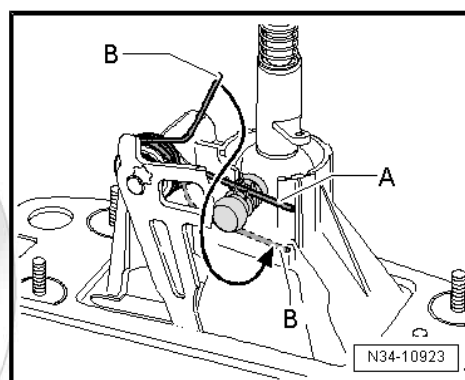


- The shift lever guide must protrude out of the shift housing as far as the stop.
- Insert the leg -A- of the pressure spring from the top into the guide.
- Pull leg -B- of pressure spring downwards and insert the leg -B- next to the guide (in direction of the spherical head).

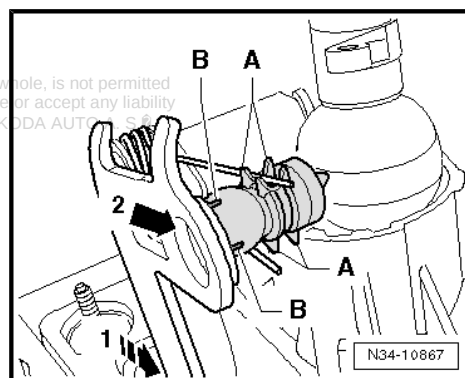


Note

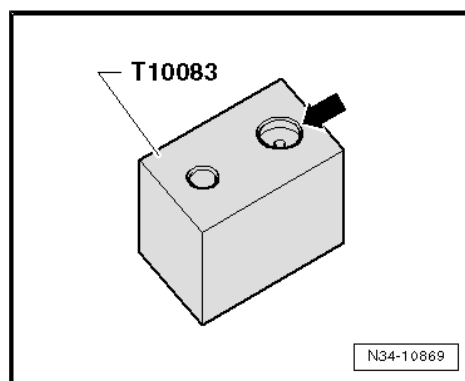
To provide a clearer illustration, only the selector angle plate is partially illustrated.



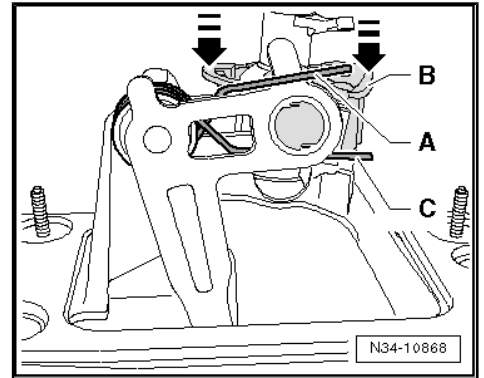
- Carefully remove shift housing with shift lever guide from the insert base - T10083- .
- Move selector angle plate up to stop to the rear (opposite the location holes for shift and selector cable) -direction of arrow 1-.
- Grease the ball stud with grease -G 000 450 02-.
- Press the ball stud into the selector angle plate -arrow 2-.
- The guides -A- and the tabs -B- must not be damaged.



- Position shift housing with shift lever guide into the larger recess -arrow- of the Insert base -T10083- .



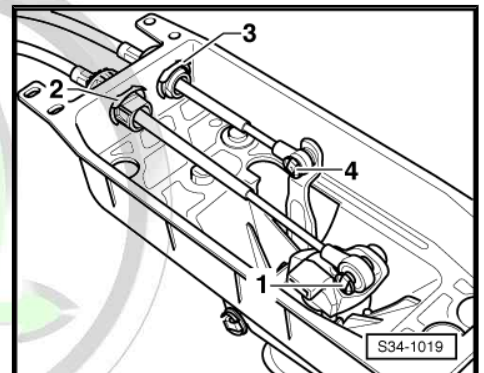
- The shift lever guide must protrude out of the shift housing as far as the stop.
- Lift the upper leg -A- of the pressure spring over the stud of the selector angle plate.
- Use a new bearing shell -B-.
- Grease the bearing shell and the bearing ball of the shift lever guide with grease -G 000 450 02- .
- Press the bearing shell up to stop onto the bearing ball of the shift lever guide.
- Remove shift housing from the insert base -T10083- .
- Press the bearing shell into the shift housing -arrows-.
- All catch pegs must click audibly.
- Insert the lower leg -C- of the pressure spring into the guide.
- Lift the upper leg -A- of the pressure spring over the stud of the selector angle plate into the guide.



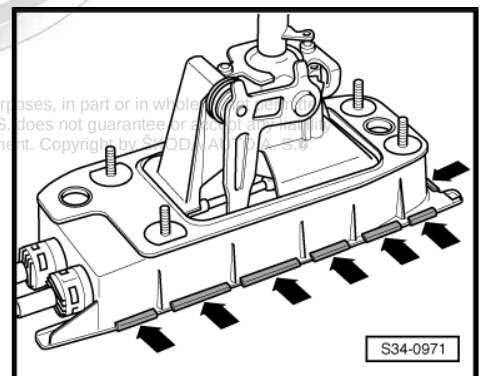
i Note

Install the shift lever if it was removed.

- Attach shift cable and selector cable to shift housing with circlips -2 and 3-.
- Press shift cable and selector cable onto shift lever and selector lever into shift housing (lock washers -1 and 4- are no longer available).



- Install gasket and attach cover for shift mechanism by bending up the tabs -arrows-.
- Installing shift mechanism ⇒ [page 63](#)
- Setting the shift mechanism ⇒ [page 69](#)



1.8 Summary of components - Control cables up to 10.06

i Note

Grease all bearing and contact surfaces with grease -G 000 450 02- .

1 - Shift cable

- ☐ connect with cable lock Pos. 11
- ☐ Fitting position
⇒ [page 44](#)
- ☐ removing and installing
⇒ [page 67](#)
- ☐ adjust ⇒ [page 69](#)
- ☐ attach with cable strap to the selector cable
⇒ [page 59](#)
- ☐ as of 11.06 the attachment of the control cable in the shift housing is modified ⇒ [page 59](#)

2 - Selector cable

- ☐ connect with cable lock Pos. 10
- ☐ Fitting position
⇒ [page 44](#)
- ☐ removing and installing
⇒ [page 67](#)
- ☐ adjust ⇒ [page 69](#)
- ☐ attach with cable strap to the shift cable
⇒ [page 59](#)
- ☐ as of 11.06 the attachment of the control cable in the shift housing is modified ⇒ [page 59](#)

3 - Circlips

- ☐ always replace ⇒ Electronic Catalogue of Original Parts

- ☐ as of 11.06 the lock washers are no longer available ⇒ [page 59](#)

4 - Shift housing

5 - Locking clips

- ☐ do not damage cables when removing
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

6 - 20 Nm

- ☐ 3 pieces
- ☐ for cable support

7 - Cable support

- ☐ made out of plastic or metal

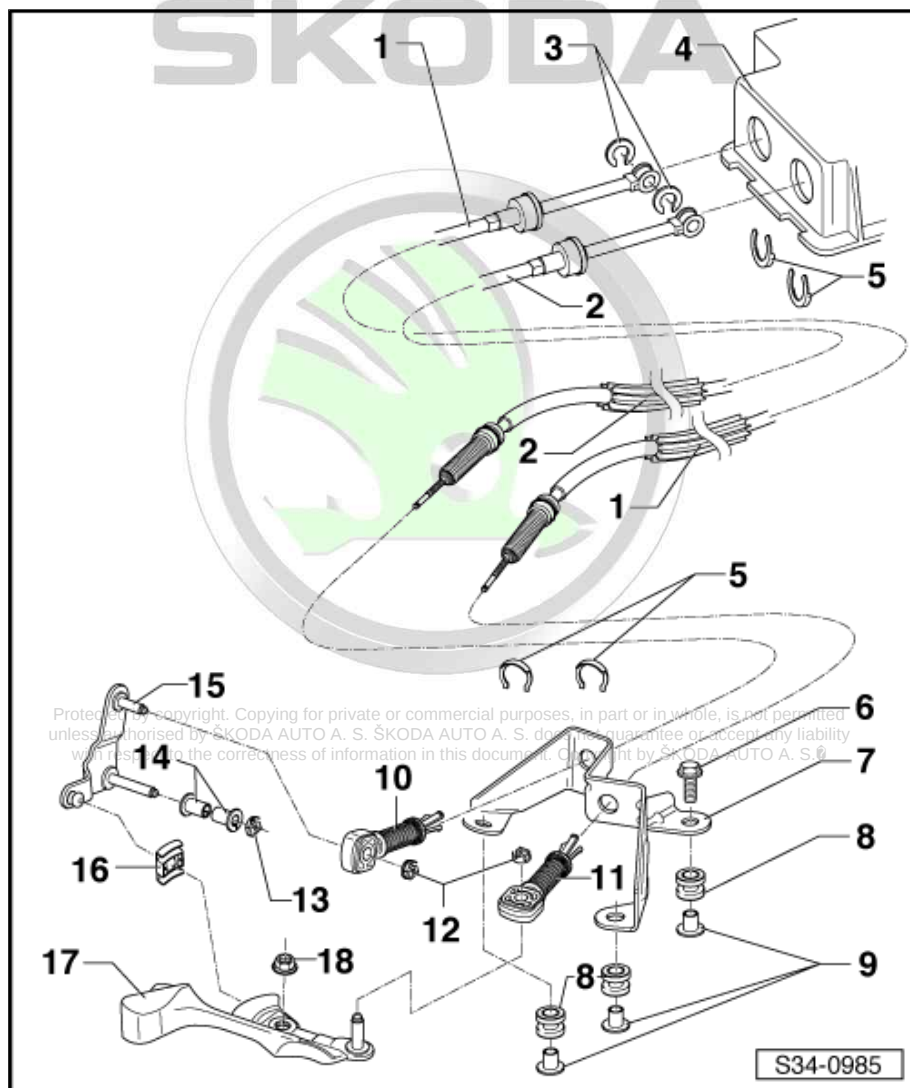
8 - Grommet

- ☐ for mounting of cable support to gearbox

9 - Bush

10 - Cable lock

- ☐ Selector cable at relay lever
- ☐ after installing set shift mechanism ⇒ [page 69](#)
- ☐ do not interchange, cable locks for selector cable at relay lever and for shift cable at gearbox are different
⇒ [page 58](#)
- ☐ unlock ⇒ [page 70](#) for setting the gearshift mechanism





- ☐ as of 06.07 it is fitted together with plastic relay lever ⇒ [page 61](#)
- ☐ remove from plastic relay lever ⇒ [page 61](#)
- ☐ press onto plastic relay lever ⇒ [page 61](#)

11 - Cable lock

- ☐ Shift cable at gearbox shift lever
- ☐ after installing set shift mechanism ⇒ [page 69](#)
- ☐ do not interchange, cable locks for selector cable at relay lever and for shift cable at gearbox are different ⇒ [page 58](#)
- ☐ unlock ⇒ [page 70](#) for setting the gearshift mechanism

12 - Circlips

- ☐ always replace ⇒ Electronic Catalogue of Original Parts
- ☐ is not required for cable lock for selector cable at relay lever, if relay lever is made of plastic

13 - Lock washer

- ☐ always replace ⇒ Electronic Catalogue of Original Parts
- ☐ is not required for plastic relay lever

14 - Bushings

- ☐ is not required for plastic relay lever

15 - Reversing lever

- ☐ Fitting position ⇒ [page 59](#)
- ☐ after installing set shift mechanism ⇒ [page 69](#)
- ☐ as of 06.07 the reversing level is plastic
- ☐ Removing and installing plastic relay lever together with cable lock ⇒ [page 61](#)
- ☐ If the relay lever is made of plastic, neither the bushings pos. 14 nor the lock washer pos. 12 are required

16 - Sliding shoe

17 - Gearshift lever

- ☐ with balancing weight
- ☐ insert in such a way that the interrupted spacing of the teeth matches the gearshift shaft ⇒ [page 58](#)
- ☐ Fitting position ⇒ [page 59](#)
- ☐ after installing set shift mechanism ⇒ [page 69](#)
- ☐ as of 06.06 the diameter of the fixing bolts is smaller ⇒ [page 58](#)

18 - 23 Nm

- ☐ always replace ⇒ Electronic Catalogue of Original Parts



Assign cable locks

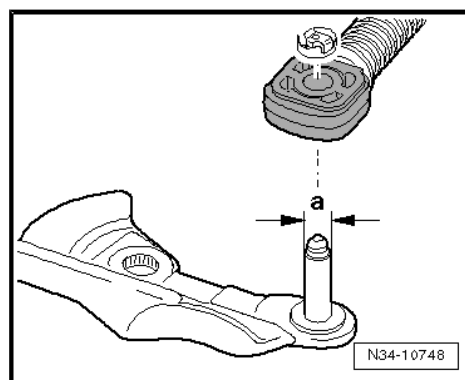
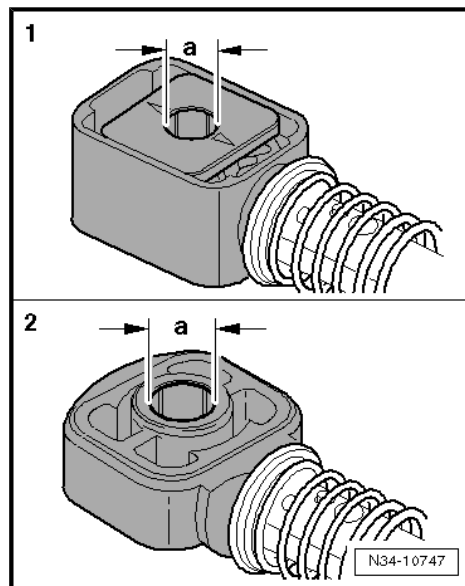
The holes in the cable locks have different diameters.

Cable lock for:	Dimension "a"
1 - as of 06.06 - Shift cable at gearbox shift lever	8.5 mm
2 - until 05.06 - Shift cable at gearbox shift lever	10 mm
2 - Selector cable at relay lever	8 mm
2 - Selector cable at plastic relay lever	10 mm

⇒ [page 61](#)

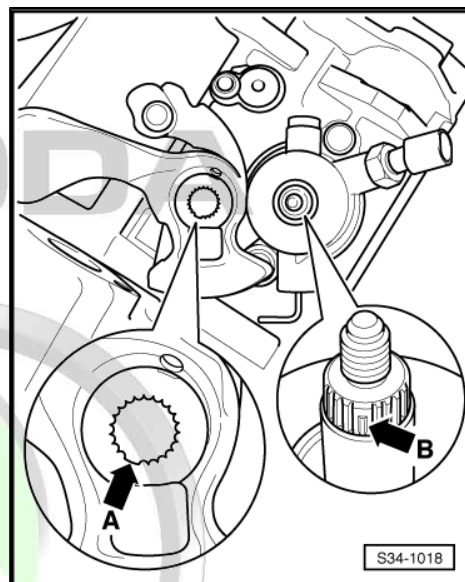
As of 06.06 the diameter of the fixing bolts is smaller

Fixing bolts:	Dimension "a"
until 05.06 - Shift cable at gearbox shift lever	10 mm
as of 06.06 - Shift cable at gearbox shift lever	8.5 mm



Install gearshift lever

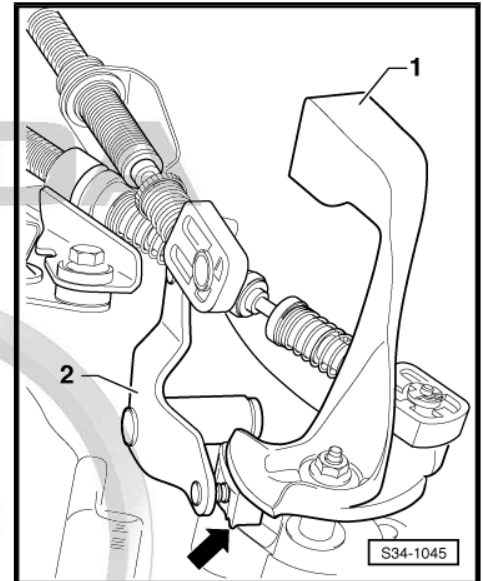
- When inserting the gearshift lever make sure that the gap between the teeth -arrow A- in the interrupted spacing matches the gearshift shaft -arrow B-.





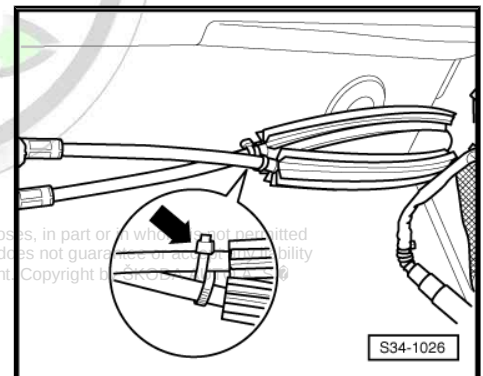
Fitting location of gearbox shift lever/relay lever

- 1 - Gearbox shift lever with balancing weight
- 2 - Relay lever is inserted over the sliding shoe -arrow- into the sliding rail of the gearbox shift lever



Fitting position of cable strap for cable attachment

- Cross cable strap -arrow-, in order to coil up the cables and fix as shown.



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1.9 Summary of components - Control cables as of 11.06



Note

Grease all bearing and contact surfaces with grease -G 000 450 02-.

1 - Shift cable

- ☐ connect with cable lock
Pos. 11
- ☐ Fitting position
⇒ [page 44](#)
- ☐ removing and installing
⇒ [page 67](#)
- ☐ adjust ⇒ [page 69](#)
- ☐ attach with cable strap
to the selector cable
⇒ [page 59](#)
- ☐ as of 11.06 the attach-
ment of the control cable
in the shift housing Pos.
4 is modified

2 - Selector cable

- ☐ connect with cable lock
Pos. 10
- ☐ Fitting position
⇒ [page 44](#)
- ☐ removing and installing
⇒ [page 67](#)
- ☐ adjust ⇒ [page 69](#)
- ☐ attach with cable strap
to the shift cable
⇒ [page 59](#)
- ☐ as of 11.06 the attach-
ment of the control cable
in the shift housing Pos.
4 is modified

3 - Bush for selector cable

- ☐ from 11.06

4 - Shift housing

5 - Locking clips

- ☐ do not damage cables when removing
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

6 - 20 Nm

- ☐ 3 pieces
- ☐ for cable support

7 - Cable support

- ☐ made out of plastic or metal

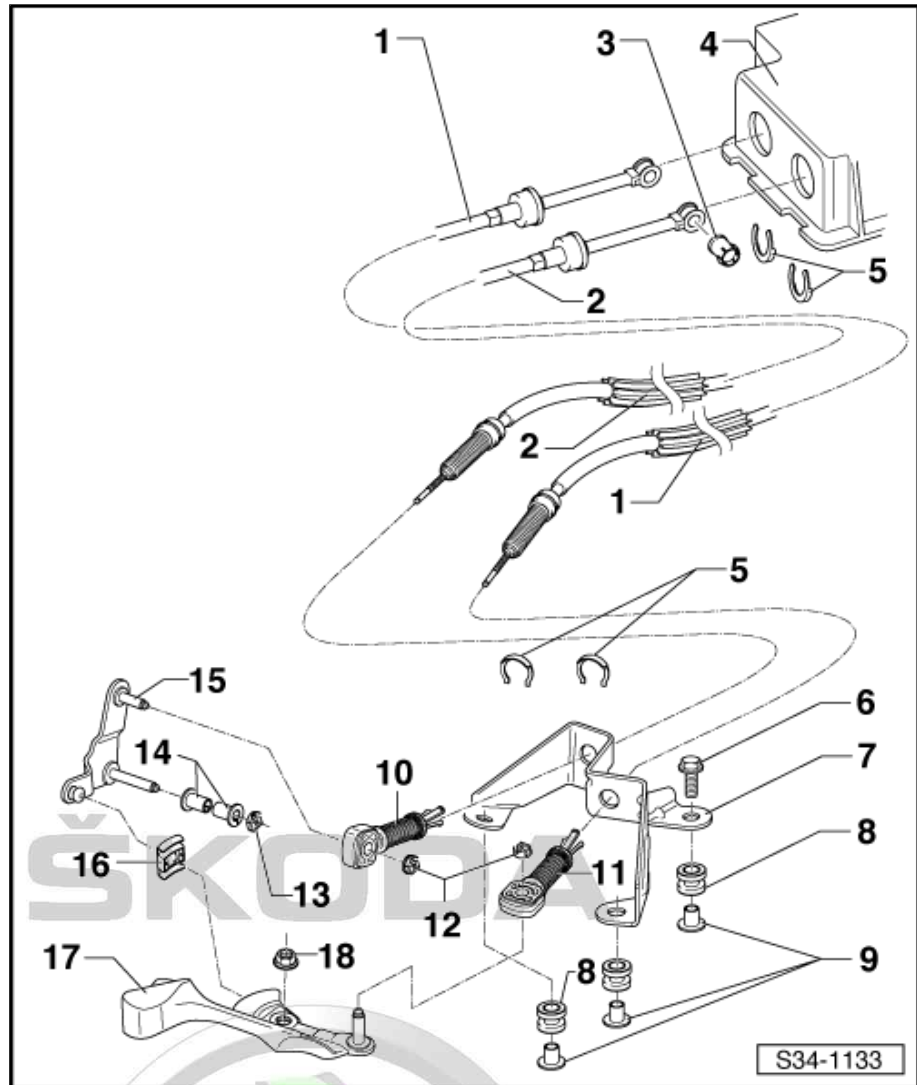
8 - Grommet

- ☐ for mounting of cable support to gearbox

9 - Bush

10 - Cable lock

- ☐ Selector cable at relay lever
- ☐ after installing set shift mechanism ⇒ [page 69](#)
- ☐ do not interchange, cable locks for selector cable at relay lever and for shift cable at gearbox are different
⇒ [page 58](#)
- ☐ unlock ⇒ [page 70](#) for setting the gearshift mechanism
- ☐ as of 06.07 it is fitted together with plastic relay lever ⇒ [page 61](#)
- ☐ remove from plastic relay lever ⇒ [page 61](#)
- ☐ press onto plastic relay lever ⇒ [page 61](#)





11 - Cable lock

- ☐ Shift cable at gearbox shift lever
- ☐ after installing set shift mechanism ⇒ [page 69](#)
- ☐ do not interchange, cable locks for selector cable at relay lever and for shift cable at gearbox are different ⇒ [page 58](#)
- ☐ unlock ⇒ [page 70](#) for setting the gearshift mechanism

12 - Circlips

- ☐ always replace ⇒ Electronic Catalogue of Original Parts
- ☐ is not required for cable lock for selector cable at relay lever, if relay lever is made of plastic

13 - Lock washer

- ☐ always replace ⇒ Electronic Catalogue of Original Parts
- ☐ is not required for plastic relay lever

14 - Bushings

- ☐ is not required for plastic relay lever

15 - Reversing lever

- ☐ Fitting position ⇒ [page 59](#)
- ☐ after installing set shift mechanism ⇒ [page 69](#)
- ☐ as of 06.07 the reversing level is plastic
- ☐ Removing and installing plastic relay lever together with cable lock ⇒ [page 61](#)
- ☐ If the relay lever is made of plastic, neither the bushings pos. 14 nor the lock washer pos. 12 are required

16 - Sliding shoe

17 - Gearshift lever

- ☐ with balancing weight
- ☐ insert in such a way that the interrupted spacing of the teeth matches the gearshift shaft ⇒ [page 58](#)
- ☐ Fitting position ⇒ [page 59](#)
- ☐ after installing set shift mechanism ⇒ [page 69](#)
- ☐ as of 06.06 the diameter of the fixing bolts is smaller ⇒ [page 58](#)

18 - 23 Nm

- ☐ always replace ⇒ Electronic Catalogue of Original Parts

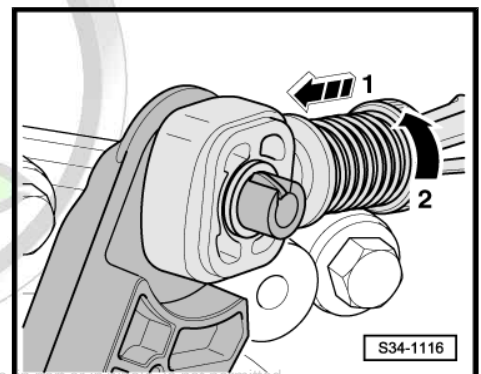
1.10 Plastic relay lever

Special tools and workshop equipment required

- ◆ Grease -G 000 450 02-

Removing and installing plastic relay lever as of 06.07

- Pull forward the locking mechanism as far as the stop in -direction of arrow 1-, then lock by turning to the left in -direction of arrow 2-.
- Before removal, the cable lock must be separated from the selector cable in order to avoid damage to the selector cable.
- Gearbox shift lever is located in the neutral position.



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The relay lever is secured with a catch -arrow 1- on the gearshift cover

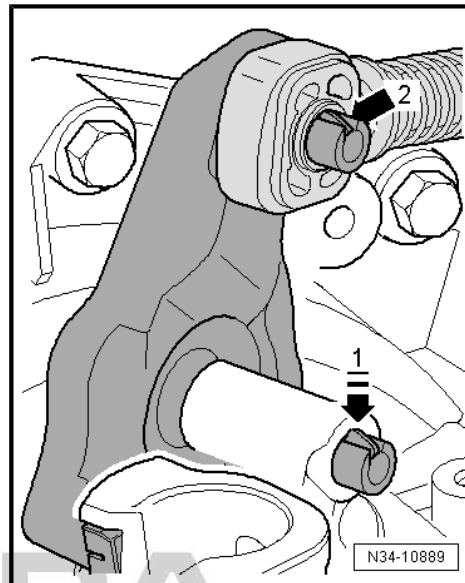
- Carefully press down the catch -arrow 1- as far as the stop.
- Afterwards move relay lever in its bearing point back and forward (direction of operation). To do so, carefully pull out the cable lock.
- Only remove cable lock on removed relay lever ⇒ [page 63](#) .



Note

To install, grease bearing points and friction surfaces with grease -G 000 450 02- .

- Press cable lock onto the relay lever ⇒ [page 63](#) .
- Insert relay lever together with cable lock.
- The catch -arrow 1- secures the relay lever.
- The cable lock must be located behind the catch -arrow 2-.



The relay lever is secured with a clip -arrow 1- on the gearshift cover

- Remove the clip -arrow 1- from the opening in the relay lever.
- Pull the relay lever out of its bearing point in the gearshift cover together with the cable lock.
- Only remove cable lock on removed relay lever ⇒ [page 63](#) .



Note

To install, grease bearing points and friction surfaces with grease -G 000 450 02- .

- Press cable lock onto the relay lever ⇒ [page 63](#) .
- Insert relay lever together with cable lock.
- Secure the relay lever with a clip -arrow 1-.

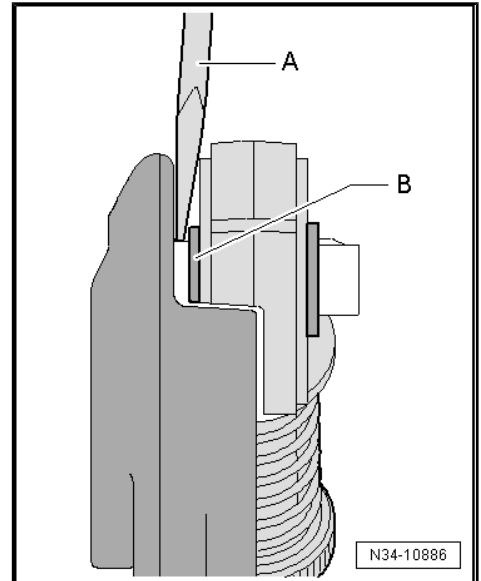


Remove and install cable lock for selector cable from plastic relay lever.

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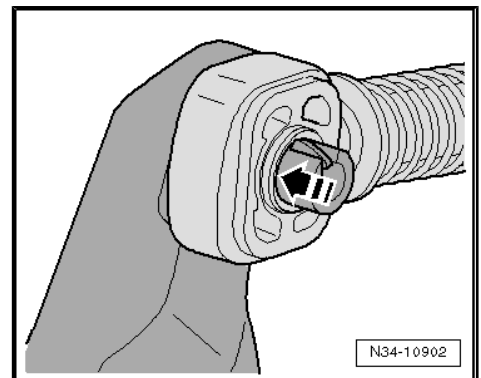
Release cable lock for selector cable from plastic relay lever

- Relay lever removed.
- Insert cross-head screwdriver -A- between bushing -B- and relay lever.



Press on cable lock

- Relay lever removed.
- The cable lock must only be pressed onto the bushing -arrow-.
- Cable lock must move freely on relay lever.
- It must be located behind the catch ⇒ [page 62](#).



1.11 Removing and installing shift mechanism

1.11.1 Removing

Special tools and workshop equipment required

- ◆ Grease -G 000 450 02-

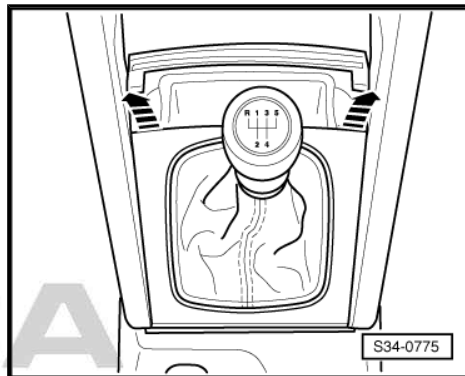


Note

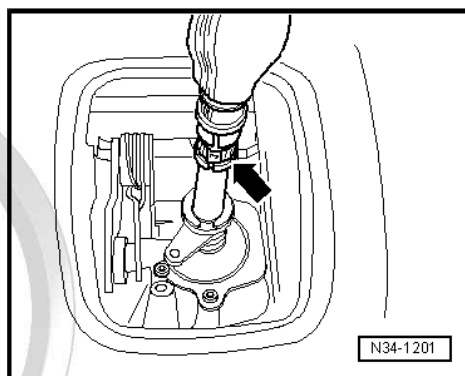
After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27.

- Disconnect the battery-earth strap with the ignition off ⇒ Electrical System ⇒ Rep. Gr. 27.
- Remove air filter ⇒ Engine ⇒ Rep. Gr. 23.

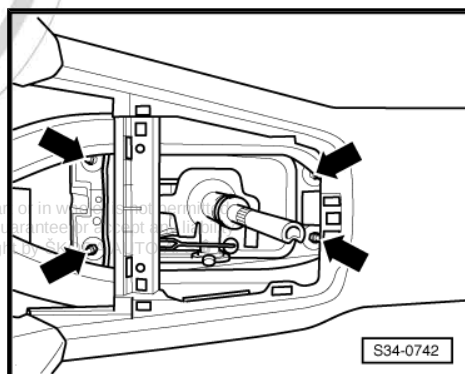
- Lever the collar upwards and out of centre console cover -arrows-.



- Open clamp -arrow- and pull off gearshift knob together with the collar.
- If present, detach the noise insulation.
- Remove the ashtray ⇒ Body Work ⇒ Rep. Gr. 68.



- Unscrew nuts -arrows- attaching the shift housing.



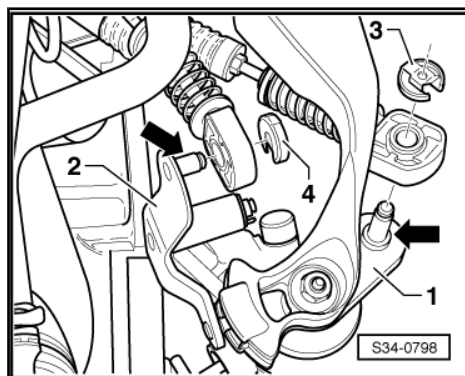
- Remove circlip -3- for shift cable from gearbox shift lever -1-.

Metal relay lever

- Remove circlip -4- for selector cable from relay lever -2-.
- Remove selector cable and shift cable from the studs -arrows-.

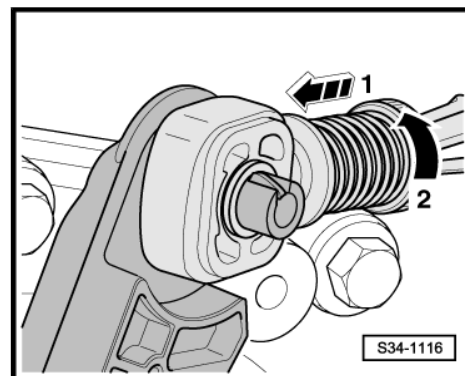
Plastic relay lever

- Pull off the shift cable from the stud.
- In order to avoid damage to the selector cable, the cable lock must be separated from the selector cable before removal.

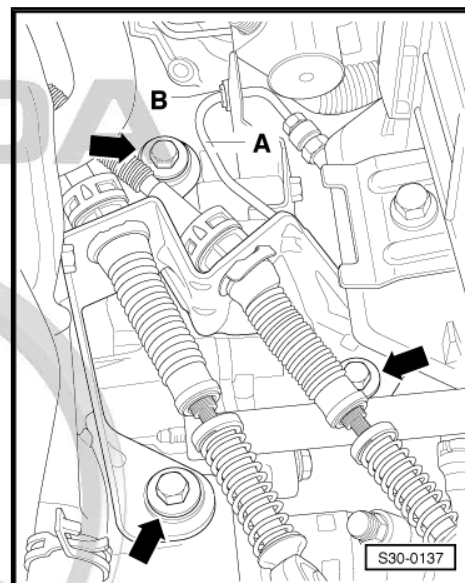


- Pull forward the locking mechanism as far as the stop in -direction of arrow 1-, then lock by turning to the left in -direction of arrow 2-.
- Remove the plastic relay lever together with the cable lock
⇒ [page 61](#) .

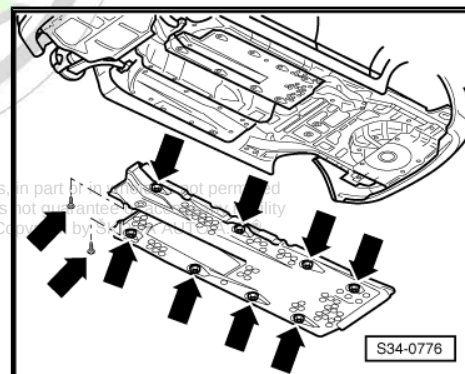
Continued for all vehicles



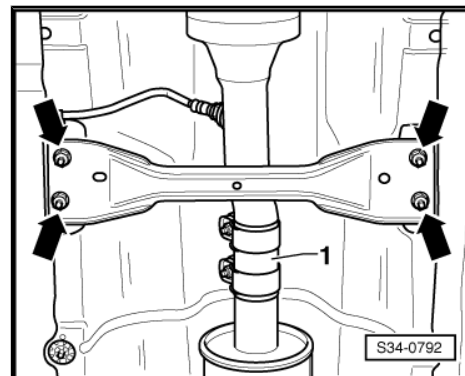
- Disconnect the Bowden cable support from gearbox -arrows-, if necessary first unclip hose line -A- at bracket -B-.
- If present, remove the sound dampening system ⇒ Body work
⇒ Rep. Gr. 50 .



- Remove underbody cover on right and left -arrows-.
- Detach tunnel bridges below the exhaust system ⇒ Engine ⇒ Rep. Gr. 26 .

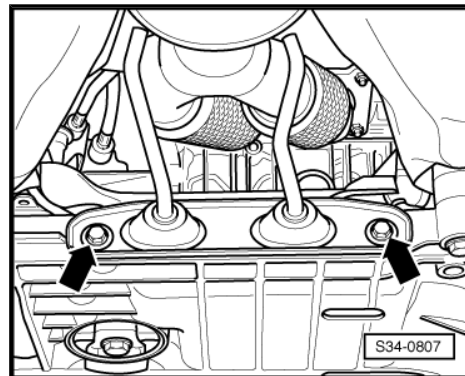


- Separate exhaust system at the double clamp -1-.

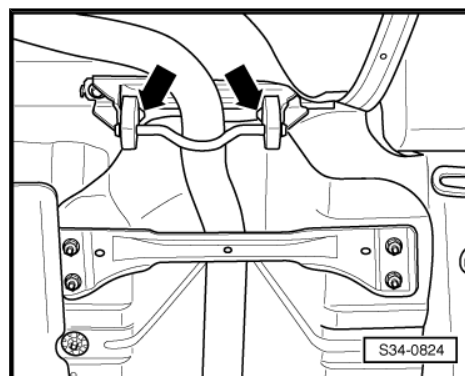




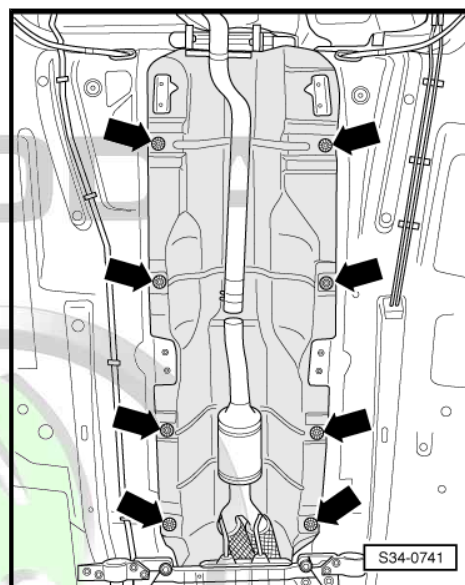
- Unbolt bracket for front silencer -arrows-.



- Unhook rear silencer from spring loops -arrows-.



- Clip off clips -arrows- and remove heat shield.
- Swivel shift housing down and remove with control cables.



1.11.2 Install

Installation is performed in the reverse order, pay attention to the following points:

The holes in the cable locks have different diameters.

⇒ [page 58](#)

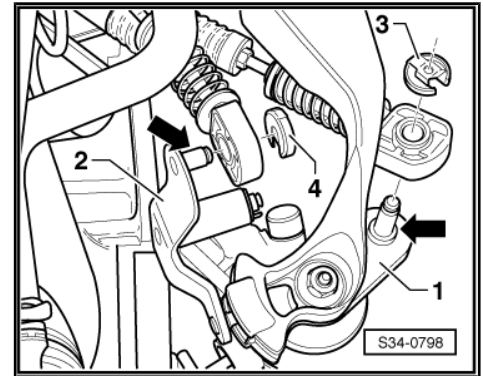
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- Apply a small quantity of grease -G 000 450 02- onto the studs -arrows- of the gearbox shift lever -1- and of the relay lever -2-.
- Always replace lock washers -3- and -4- after each disassembly ⇒ Electronic Catalogue of Original Parts .
- Secure the shift cable with the lock washer -3- and the selector cable with the lock washer -4- (for metal relay lever).

Cable lock with plastic relay lever

- Relay lever and cable lock must be mounted together ⇒ [page 61](#) .
- Insert the selector cable into the cable lock.



Continued for all gearshift mechanisms

- Align shift housing parallel to vehicle body.
- The distance to the vehicle body must be the same on both sides.
- Replace clamp -arrow- ⇒ Electronic Catalogue of Original Parts .
- Assemble exhaust system free of stress and attach tunnel bridges ⇒ Engine ⇒ Rep. Gr. 26 .
- Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .
- Install ashtray. ⇒ Body Work ⇒ Rep. Gr. 68
- Setting the shift mechanism ⇒ [page 69](#) .
- Install air filter ⇒ Engine ⇒ Rep. Gr. 23 .

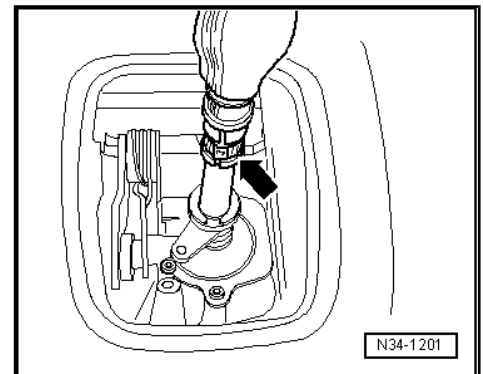
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Note

After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .

- Connect earth strap of battery while paying attention to the notes in the ⇒ Electrical System ⇒ Rep. Gr. 27 .



Tightening torque

Component	Nm
Shift housing to body	⇒ page 47
Cable support to gearbox	⇒ page 55
Underbody cover	⇒ Body Work ⇒ Rep. Gr. 50

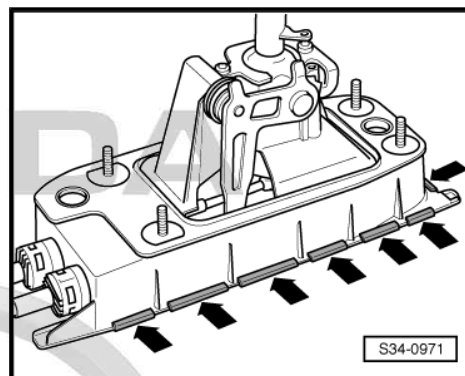
1.12 Removing and installing shift cable and selector cable

1.12.1 Removing

- Removing shift mechanism ⇒ [page 63](#) .

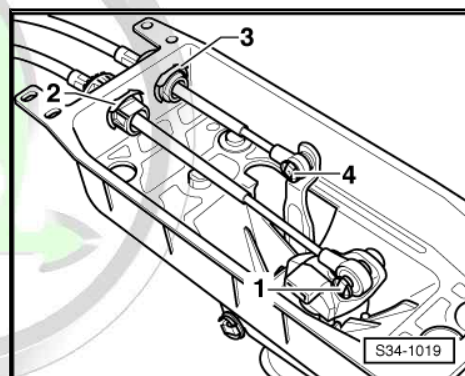
- Bend up tabs -arrows- of cover for the shift mechanism using a screwdriver and remove cover.
- Remove gasket ring.

Vehicles up to 10.06

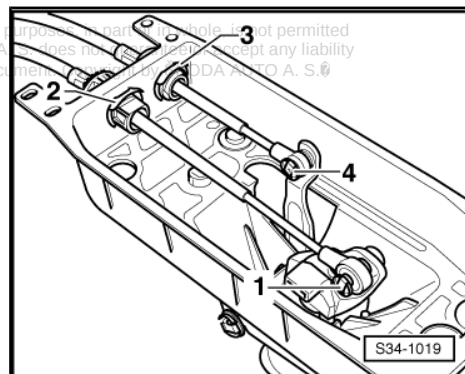


- Remove circlips -1,2,3,4- and remove shift cable and selector cable from shift housing.

Vehicles as of 11.06



- Remove lock washers -2 and 3- (lock washers -1 and 4- are no longer available), selector cable and shift cable must be levered off from the shift lever or selector lever e.g. with a screwdriver.

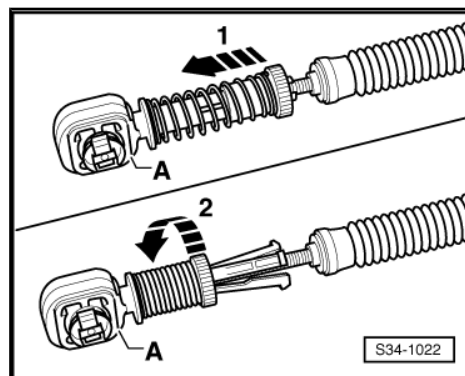


Continued for all vehicles

- Remove shift cable and selector cable from shift housing.

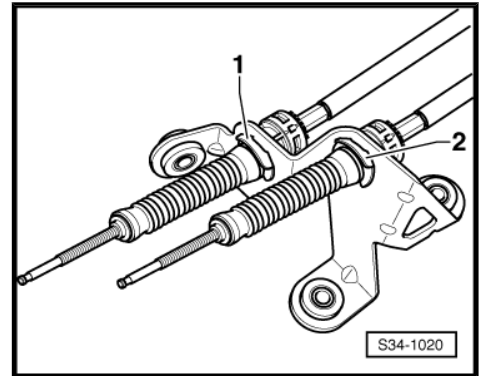
Unlock catches -A- for shift cable and selector cable as follows:

- Slide sliding sleeve forwards up to the stop -arrow 1-.
- Turn sliding sleeve to the right up to the stop -arrow 2- until it locks audibly.
- Remove the catches from the cables.





- Remove circlips -1- and -2-.
- Remove the cable support from the cables.



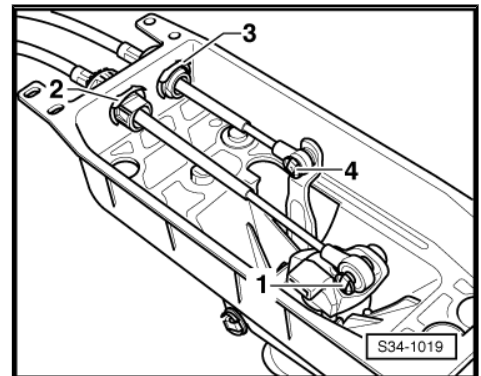
1.12.2 Install

Installation is performed in the reverse order, pay attention to the following points:

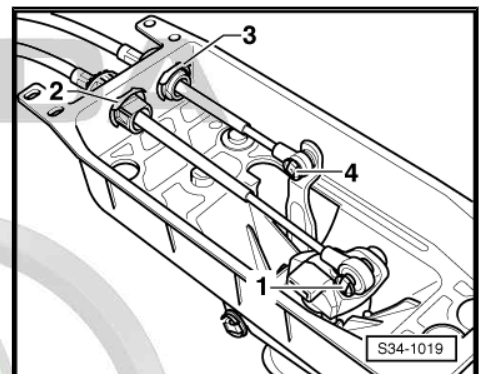
Vehicles up to 10.06

- Attach shift cable and selector cable to shift housing with circlips -2 and 3-.
- Fasten shift cable and selector cable onto shift lever and selector lever into shift housing with lock washers -1 and 4-.

Vehicles as of 11.06

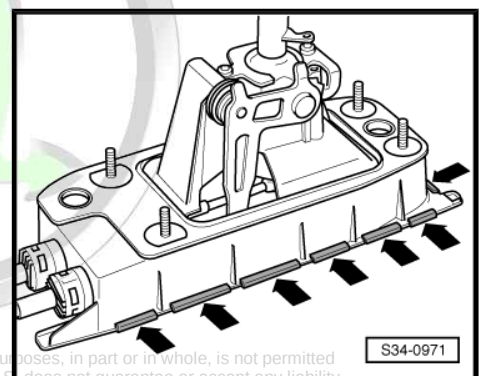


- Attach shift cable and selector cable to shift housing with circlips -2 and 3-.
- Press shift cable and selector cable onto shift lever and selector lever into shift housing (lock washers -1 and 4- are no longer available).



Continued for all vehicles

- Install gasket and attach cover for shift mechanism by bending up the tabs -arrows-.
- Installing shift mechanism ⇒ [page 63](#).
- Setting the shift mechanism ⇒ [page 69](#).



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1.13 Setting the shift mechanism

Special tools and workshop equipment required

◆ Rig pin -T10027A-



Note

The following are required for correct setting of the shift mechanism:

- Gearbox, clutch and clutch control in perfect condition
- Shift mechanism operates freely
- Control and transmission elements of the shift mechanism are in perfect condition
- Gearbox in Neutral
- Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 .

Unlock catches for shift cable and selector cable as follows:

- Slide sliding sleeves at shift cable and selector cable forwards up to the stop -arrows 1-.
- Turn the sliding sleeves in direction of -arrows 2- as far as the stop until they lock in place.



Note

The cables can be moved in the catches.

- Gearbox in Neutral.

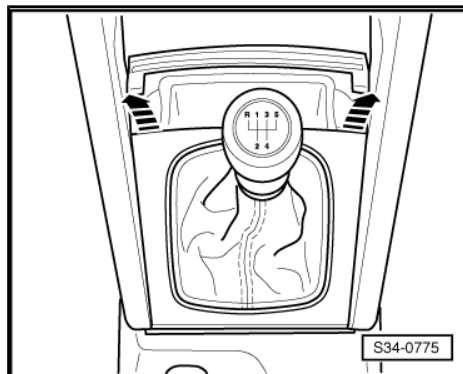
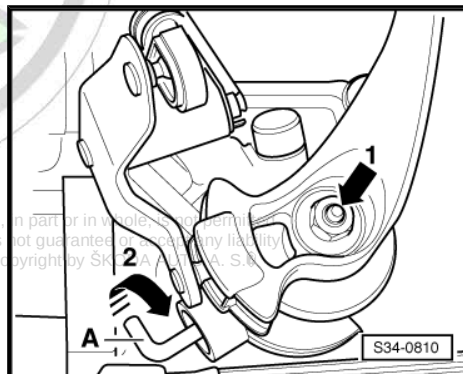
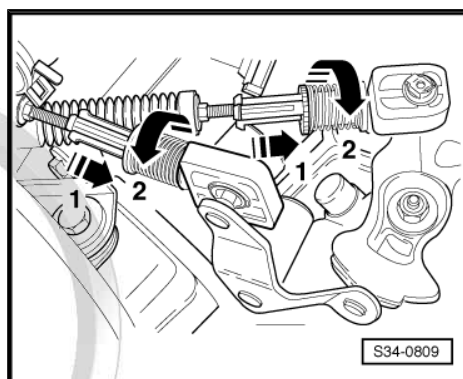
Lock the gearshift shaft as follows:

- Push down the gearbox shift lever in the direction of the arrow -1- into the selector lever gate of the 1st/2nd gear. Turn the angle lever -A- in direction of arrow -2-, until it locks.

This locks the gearshift shaft and can no longer be moved.

- Make sure that the shift cable and selector cable sit stress-free in the catches.
- Open the ashtray.

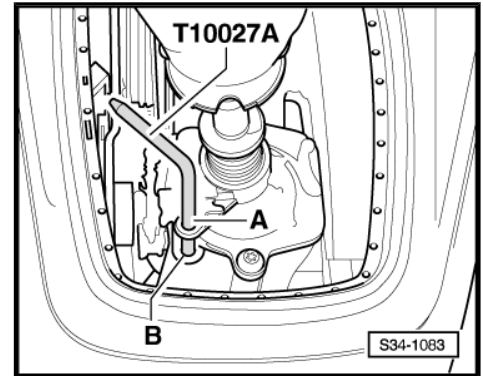
- Carefully lever off the cover from the centre console -arrows-.
- Pull the cover upwards over the gearshift knob.
- Guide shift lever in Neutral to the left into the selector lever gate of the 1st/2nd gear.
- Partly pull off the noise cover aside.



- Lock shift lever with rig pin -T10027A- .

i Note

The illustration shows the shift lever with the noise covers removed.

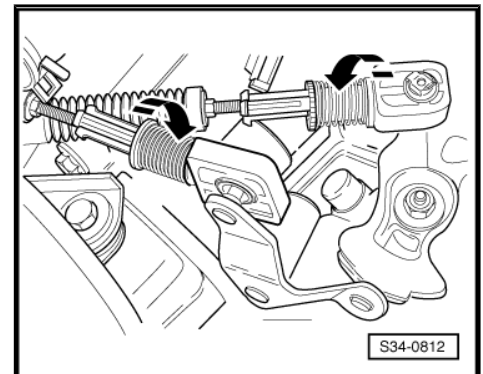


- Turn sliding sleeve at shift cable and selector cable in -direction of the arrow- up to the stop.

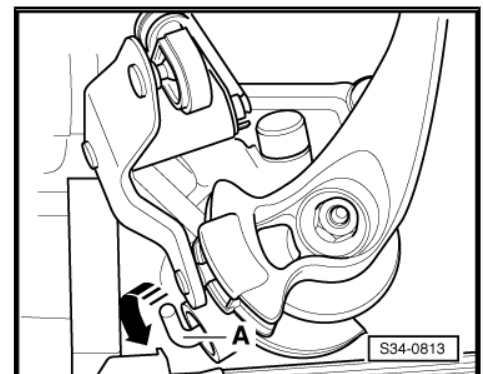
The spring pushes the sliding sleeves into the initial position.

i Note

The shift cable is now adjusted.



- Turn angle lever -A- back to the initial position (in -direction of arrow-).
- Pull rig pin -T10027A- out of the gearshift mechanism.
- Install shift lever collar.
- Install air filter ⇒ Engine ⇒ Rep. Gr. 23 .



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1.13.1 Operation

- Shift lever must be positioned in Neutral in the selector lever gate of the 3rd/4th gear.
- Press clutch.
- Shift through all gears several times. Pay particular attention to proper operation of the reverse gear lock.

If a gear catches when engaged again, set the shift mechanism once again ⇒ [page 69](#) .

2 Removing and installing the gearbox

Special tools and workshop equipment required

- ◆ Supporting device -T30099-
- ◆ Surface -T30099/1-
- ◆ Hook for MP9-200 and T30099 -MP9-200/10 (10-222A/10)-
- ◆ Gearbox mount -3282-
- ◆ Tensioning strap -T10038-
- ◆ Adjusting plate -3282/39-
- ◆ Engine/gearbox jack (e.g. -V.A.G 1383A-)
- ◆ Gearbox attachment device -MP3-478 (3336)-
- ◆ Supporting device for engine -MP3-470 (3300 A)-
- ◆ Alignment rail -MP3-457/2-

2.1 Removing the gearbox

- Remove engine cover ⇒ engine ⇒ Rep. Gr. 10 .

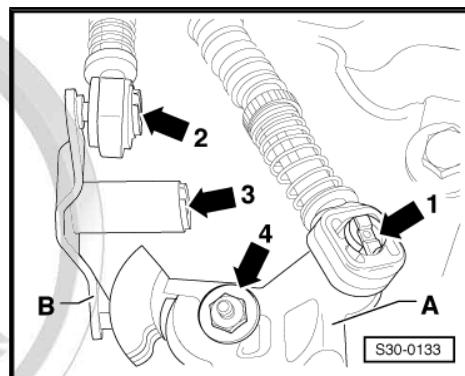


Note

- ◆ *All cable straps which are detached or cut open when removing, should be fitted on again in the same place when installing.*
- ◆ *After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ Electrical System ⇒ Rep. Gr. 27 .*
- Disconnect the battery-earth strap with the ignition off ⇒ Electrical System ⇒ Rep. Gr. 27 .
- Remove the cooling water tank cover ⇒ Body Work ⇒ Rep. Gr. 66 .
- Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 .
- Remove battery and battery tray ⇒ Electrical System ⇒ Rep. Gr. 27 .
- Remove lock washer -arrow 1- for shift cable from gearbox shift lever -A-.
- Pull off the shift cable from the stud.

Metal relay lever

- Remove circlip -arrow 2- for selector cable from relay lever -B-.
- Pull off the selector cable from the stud.
- Detach circlip -arrow 3- from the relay lever -B- and remove relay lever.



Note

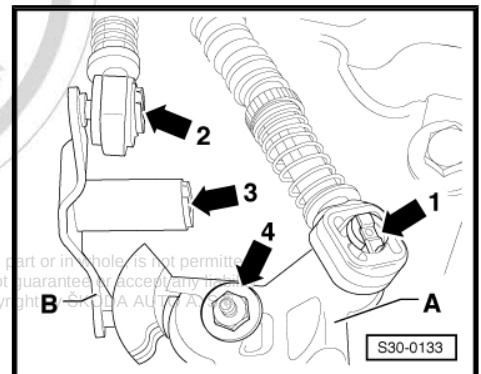
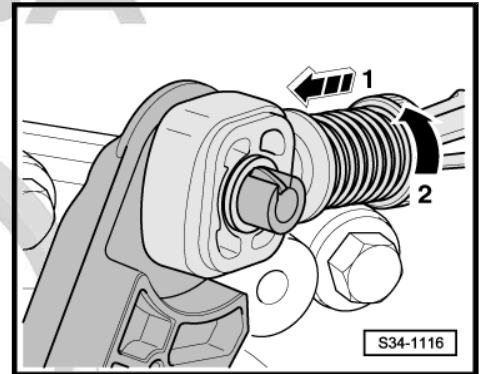
Always replace circlips ⇒ Electronic Catalogue of Original Parts .

Plastic relay lever

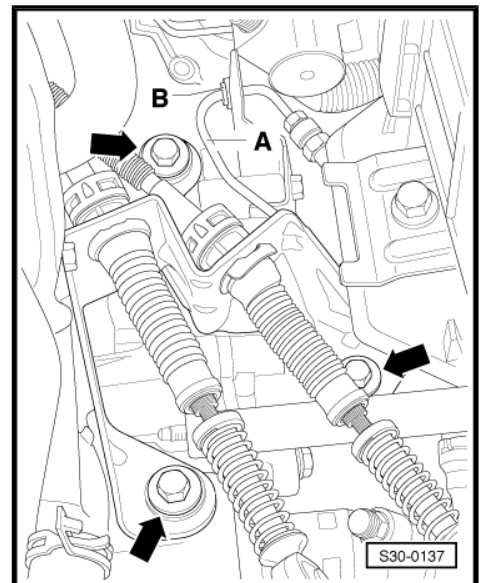
- Before removal, the cable lock must be separated from the selector cable in order to avoid damage to the selector cable.
- Pull forward the locking mechanism as far as the stop in -direction of arrow 1-, then lock by turning to the left in -direction of arrow 2-.
- Remove relay lever together with cable lock ➔ [page 61](#) .

Continued for all vehicles:

- Remove the gearshift lever -A-, for this step unscrew nut -arrow 4-.



- Disconnect the Bowden cable support from gearbox -arrows-.
- Tie up shift cable and selector cable.
- Remove bracket -B- from the gearbox and pull off from the tube-hose line -A-.

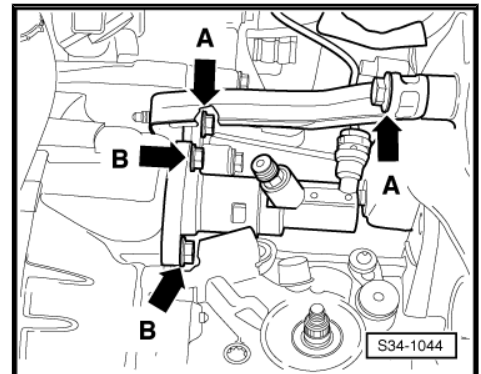


- Remove the support -arrows A-.
- Remove the slave cylinder -arrows B- and lay aside, secure with wire, do not open the line system.

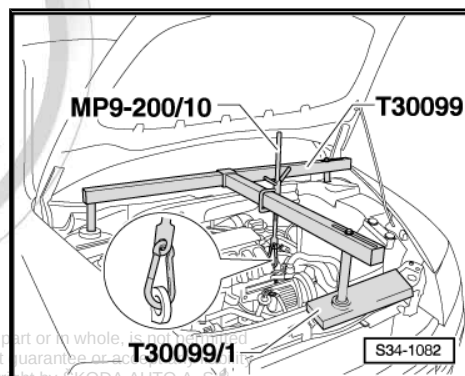
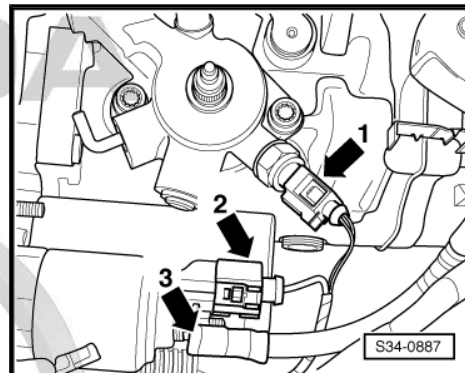


Note

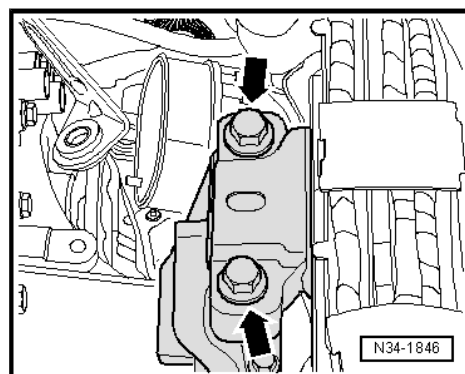
Do not depress the clutch pedal.



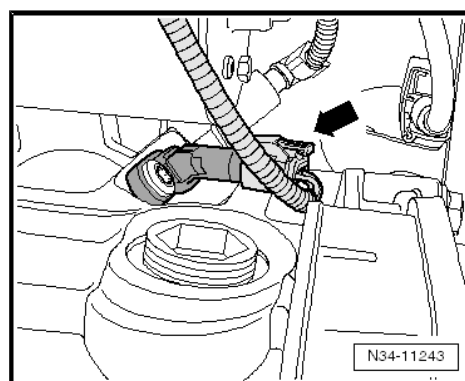
- Disconnect plug -arrow 1- from reversing light switch -F4- .
- Remove connector -arrow 2- and cable -arrow 3- from the starter.
- Expose cables.
- Remove top securing screws at starter.
- Remove engine/gearbox connecting screws at the top.
- If hose and cable connections are located in the area of the lifting eye at the engine, these must now be removed.
- Fit supporting device -T30099- .
- Take up the weight of the engine/gearbox unit at the spindles.



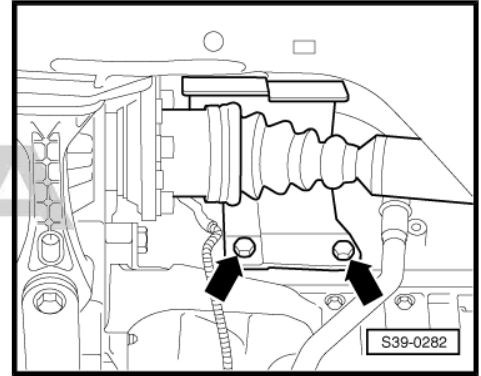
- Remove fixing screws -arrows- for engine and gearbox mount from above.
- Loosen the front left wheel bolts.
- Raise vehicle ⇒ Maintenance ; Octavia II .
- Remove left front wheel ⇒ Chassis ⇒ Rep. Gr. 44 .
- Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 and front left wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .



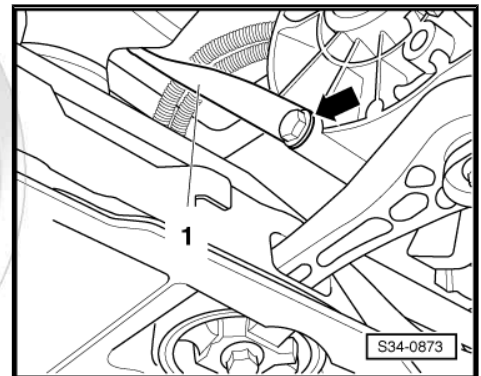
- Gearbox for vehicles with start-stop system: disconnect plug -arrow- from transmission neutral sender -G701- .
- Remove the starter ⇒ Electrical System ⇒ Rep. Gr. 27 .



- If applicable remove cap for drive shaft from the engine -arrows-.



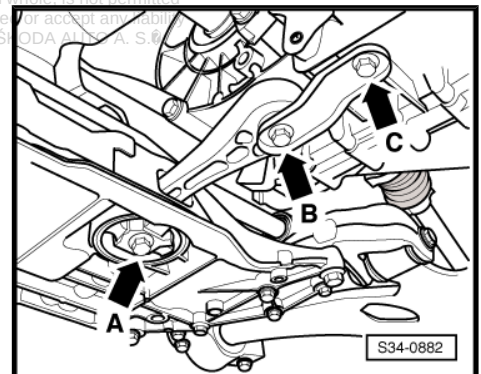
- Remove support (if present) -1- for exhaust system from gearbox -arrow- ⇒ Engine ⇒ Rep. Gr. 26 .
- Separate exhaust system at the double clamp and remove bracket for the exhaust system from the assembly carrier ⇒ Engine ⇒ Rep. Gr. 26 .
- Tie up pre-exhaust pipe.



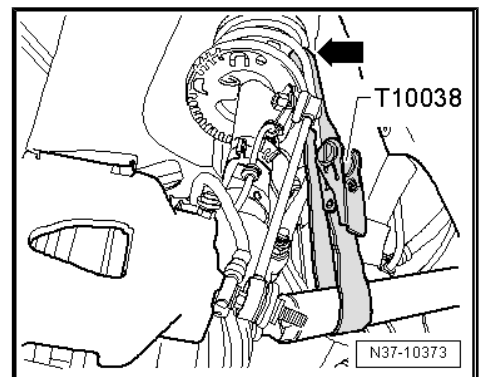
i Note

The decoupling elements in the exhaust pipe should not be bent by more than 10° - risk of damage.

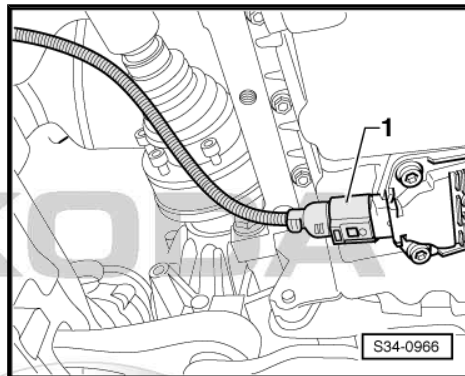
- Remove air guide hose ⇒ Engine ⇒ Rep. Gr. 23 .
- Remove pendulum support -arrows A, B and C-.
- Remove drive shafts from flange shafts ⇒ Chassis ⇒ Rep. Gr. 40 .



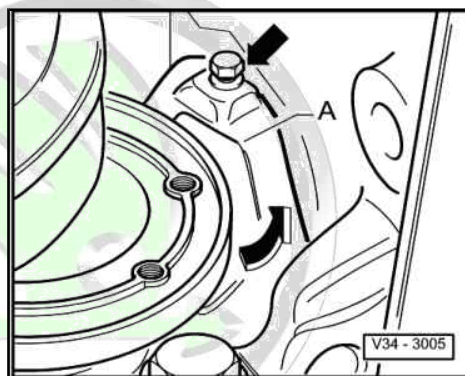
- Secure the drive shaft e.g. with the tensioning strap -T10038 - (while doing so do not damage the surface protection).



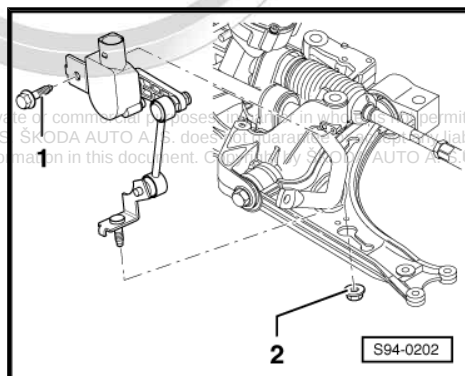
- Disconnect plug -1- from oil level and oil temperature sender -G266- .



- Remove small cover plate -A- for flywheel (if present).

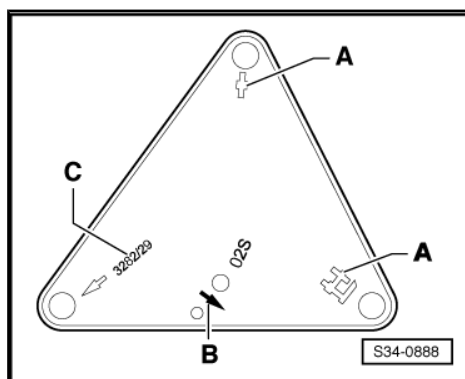


- Disconnect the plug connection on the vehicle level sensor (if present).
- Unscrew nut -2-.
- Release screw -1- and remove the sender.
- Fix the assembly carrier before removing ⇒ Chassis ⇒ Rep. Gr. 40 .
- Remove the assembly carrier with console without steering gear, left track control arm and coupling rod ⇒ Chassis ⇒ Rep. Gr. 40 .
- Insert gearbox mount -3282 - into engine/gearbox jack , e.g. - V.A.G 1383 A- .



Complete engine/gearbox jack with gearbox mount -3282- and adjusting plate -3282/39- as follows:

- Position adjusting plate -3282/39 - on gearbox mount -3282- (adjusting plate fits in only one position).
- Align arms of the gearbox mount to match the holes in the adjusting plate .
- Screw in the mounting elements -A- and -C- as shown on adjusting plate .
- Position engine/gearbox jack below vehicle, arrow -B- on adjusting plate points in the direction of travel/vehicle.

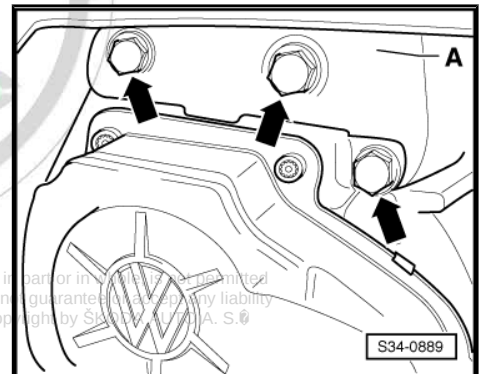
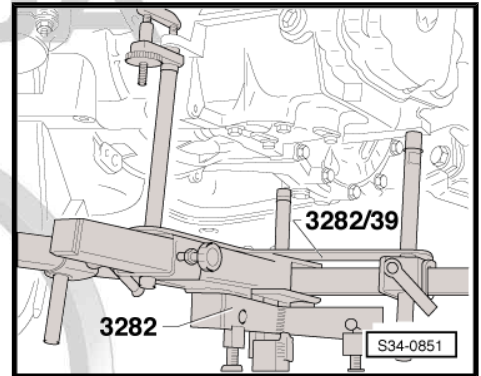


- Align adjusting plate parallel to the gearbox and lock securing elements of the support at the gearbox.
- Carefully lower engine with gearbox slightly.

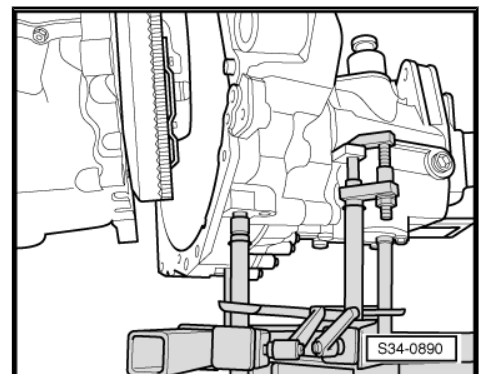
i Note

Observe all lines when lowering the gearbox.

- Remove gearbox support -A- -arrows-.
- Remove engine/gearbox connecting screws below.



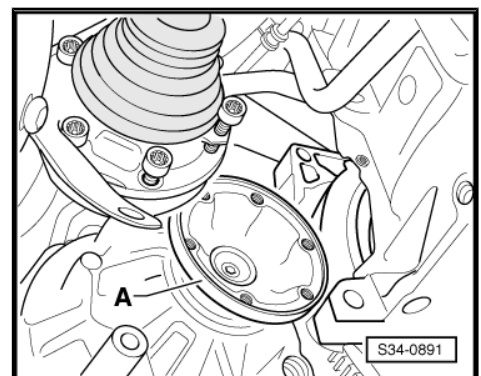
- Press the gearbox out of the dowel sleeves and carefully swing towards the assembly carrier.
- Slightly push the engine with the supporting device for engine -MP3-470 (3300 A)- forwards.
- Turn the gearbox via the spindles of the gearbox mount -3282- downwards and backwards.



- Lower gearbox carefully, while doing so guide the right flange shaft -A- into the area of the flywheel/intermediate plate as shown.
- Change the gearbox position at the spindles of the gearbox mount -3282- when lowering.

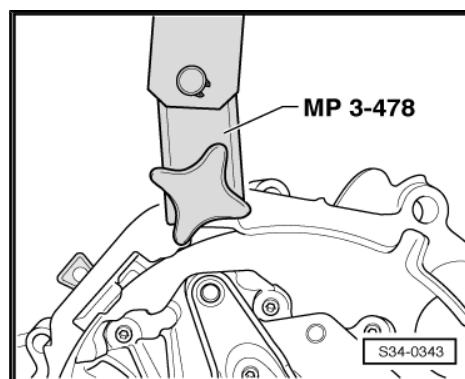
i Note

Observe all lines when lowering the gearbox.



2.1.1 Transporting the gearbox

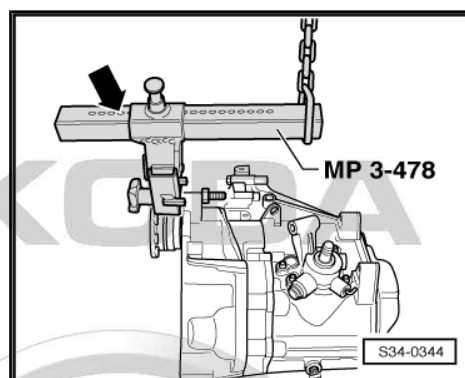
- Screw down gearbox suspension device -MP3-478 (3336)- onto clutch housing.



- Adjust supporting arm at slide with locking pin -arrow-.

Number of visible holes = 5.

- Raise gearbox with workshop crane and gearbox suspension device -MP3-478 (3336)- .
- Place down gearbox, e.g. in a transport container.



2.2 Installing the gearbox

- Before installing, check the oil level and top up with gear oil ➔ [page 81](#) .

Capacity and specification ➔ [page 1](#) .

Check the oil level and top up with gear oil, proceed according to the following overview.

“Check the gear oil level and top up”		
Gearbox 0A4	“NO”	“YES”
Original part	X	
with oil leakage	X	
Disassemble the complete gearbox		X
Partially disassemble the gearbox ¹⁾		X

¹⁾ Gearbox housing and clutch housing were not separated.

The installation of the gearbox occurs in reverse order. Observe the stress-free assembly bracket in the vehicle ➔ Engine ➔ Rep. Gr. 10 .



- Before installing the gearbox press the clutch release lever towards the gearbox housing and secure with mounting bolt or screw M 8 x 35.
- After installing the gearbox release screw again. The hole is then closed with the 3rd fixing screw for the cable support/control cables.

i Note

- ◆ Clean splines of drive shaft and apply a thin film of grease - G 000 100 - .
- ◆ Always replace the self-locking screws and nuts ⇒ *Electronic Catalogue of Original Parts* .
- ◆ If the gearbox is replaced, ensure the intermediate plate between the engine and gearbox is correctly installed.
- ◆ Check whether the dowel sleeves for centering the gearbox are present in the cylinder block, insert if necessary.
- ◆ Installing starter and cables ⇒ *Electrical System* ⇒ *Rep. Gr. 27* .
- ◆ Setting the shift mechanism ⇒ *page 69* .
- ◆ If the front left vehicle level sensor -G78- was removed, then the headlight beam setting must be checked ⇒ *Electrical System* ⇒ *Rep. Gr. 94* .

- Install noise insulation ⇒ *Body Work* ⇒ *Rep. Gr. 50* and lower part of the front left wheelhouse liner ⇒ *Body Work* ⇒ *Rep. Gr. 66* .
- Install battery tray and battery ⇒ *Electrical System* ⇒ *Rep. Gr. 27* .

i Note

After the battery earth strap is disconnected and re-connected, carry out additional operations ⇒ *Electrical System* ⇒ *Rep. Gr. 27* .

- Install air filter ⇒ *Engine* ⇒ *Rep. Gr. 23* .

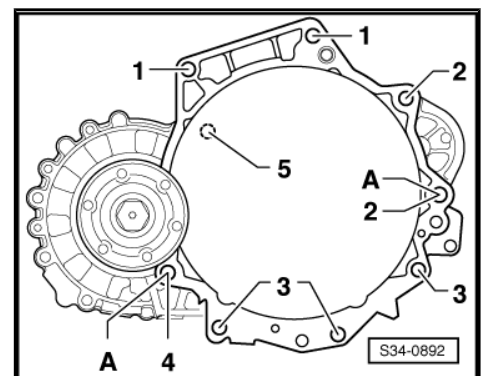
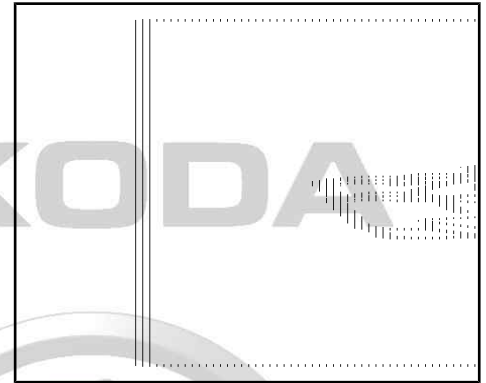
2.2.1 Tightening torques

Vehicles with 1.9 ltr./77 kW TDI PD, 1.6 ltr./77 kW TDI CR and 2.0 ltr./81 TDI CR engines

Pos.	Screw	Pieces	Nm
1	M 12 x 50	2	80
2 ¹⁾	M 12 x 150	2	80
3	M 10 x 50	3	40
4	M 12 x 60	1	80
5 ²⁾	M 6 x 8	1	10
A	Dowel sleeves for centering	2	

¹⁾ Screw with threaded pin

²⁾ small cover plate for flywheel





Component	Tightening torque
Gearbox console to gearbox ¹⁾	40 Nm + 90°
Gearbox console to gearbox mount ¹⁾	60 Nm + 90°
Support to gearbox mounting bracket and gearbox ¹⁾	20 Nm + 90°
Slave cylinder to gearbox	⇒ page 20
bracket for tube-hose line	⇒ page 20
Cable support to gearbox	⇒ page 55
Gearbox shift lever to gearshift shaft	⇒ page 55
Pendulum support	⇒ Engine ⇒ Rep. Gr. 10
Exhaust pipe with catalytic converter	⇒ Engine ⇒ Rep. Gr. 26
Support for exhaust manifold	⇒ Engine ⇒ Rep. Gr. 26
Bracket for electric cables	⇒ Electrical System ⇒ Rep. Gr. 27
Drive shaft to flange shaft	⇒ Chassis ⇒ Rep. Gr. 40
Coupling rod	⇒ Chassis ⇒ Rep. Gr. 40
Assembly carrier with console	⇒ Chassis ⇒ Rep. Gr. 40
Left track control arm	⇒ Chassis ⇒ Rep. Gr. 40
Vehicle level sensor	⇒ Chassis ⇒ Rep. Gr. 40
Protective cap drive shaft on engine	⇒ Chassis ⇒ Rep. Gr. 40
Cover plate for steering gear	⇒ Chassis ⇒ Rep. Gr. 40
Wheel bolts	⇒ Chassis ⇒ Rep. Gr. 44

¹⁾ always replace these bolts

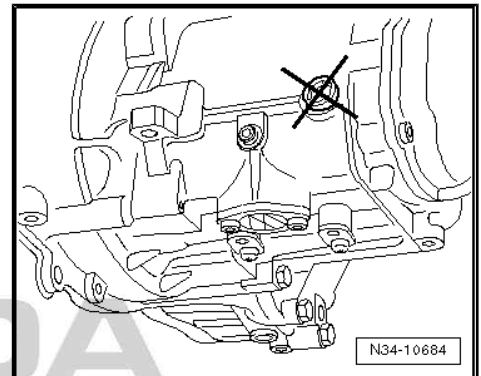
3 Check gear oil level



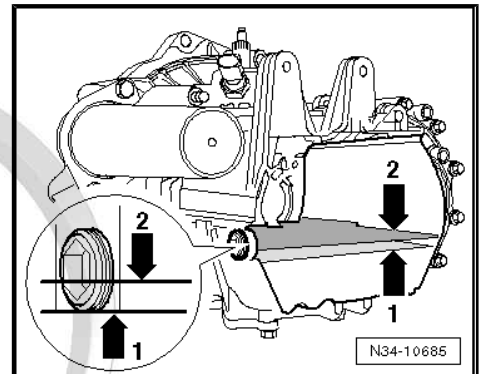
Note

- ◆ The gearbox oil level can only be checked by draining
⇒ [page 81](#) the gear oil fully and then topping up
⇒ [page 82](#) again.
- ◆ To drain off the gear oil a bearing pin for the gearshift forks in the gearbox must be removed. The gearshift shaft must be locked in such a way that the position of the gearshift forks is not changed e.g. through unintentional operation of the gearshift mechanism.

Checking the gear oil in accordance with the previously known method is no longer possible.



The inclination of the engine/gearbox unit was changed, the bottom edge of the filler hole -1- is therefore located below the new oil level -2-.



3.1 Draining out gear oil

Special tools and workshop equipment required

- ◆ Catch pan



Note

To drain off the gear oil a bearing pin for the gearshift forks in the gearbox must be removed. The gearshift shaft must be locked in such a way that the position of the gearshift forks is not changed e.g. through unintentional operation of the gearshift mechanism.

- Remove air filter ⇒ Engine ⇒ Rep. Gr. 23 .

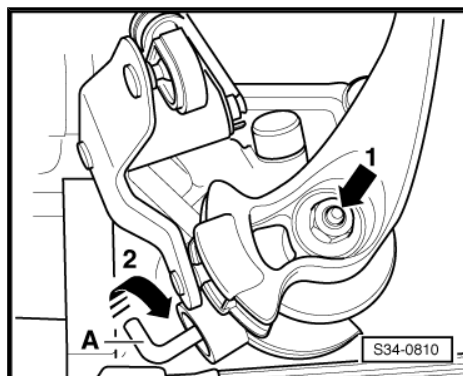
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Lock the gearshift shaft as follows:

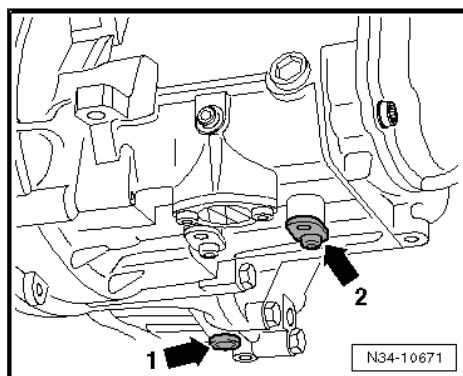
- Push down the gearbox shift lever in the direction of the arrow -1- into the selector lever gate of the 1st/2nd gear. Turn the angle lever -A- in direction of arrow -2-, until it locks.

This locks the gearshift shaft and can no longer be moved.

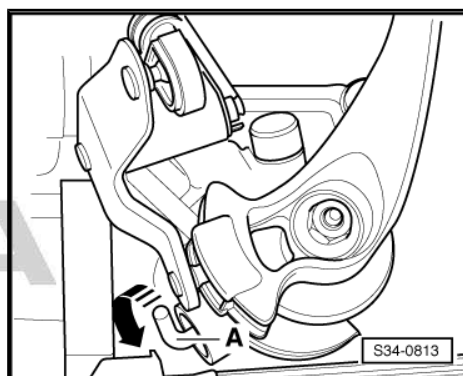
- Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .
- Position the catch pan under the gearbox.



- Remove oil drain plug -1-, bearing pin -2- and drain out gear oil.
- Install oil drain plug -1- and tighten to tightening torque ⇒ [page 106](#) .
- Install bearing pin -2- (always replace O-ring ⇒ Electronic Catalogue of Original Parts) and tighten to tightening torque ⇒ [page 87](#) .



- Turn angle lever -A- back to the initial position in -direction of arrow-.
- Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .



3.2 Pour in gear oil

Special tools and workshop equipment required

- ♦ Hose approx. 600 mm long with outer Ø 10 mm
- ♦ Hopper

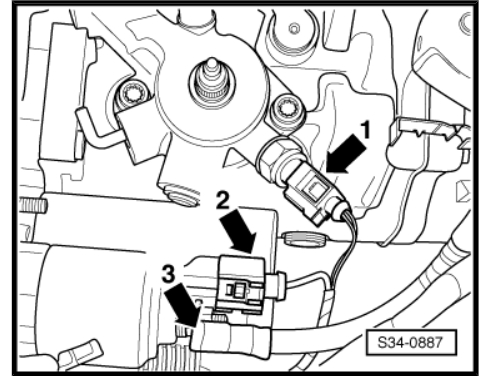
Gearbox oil specification ⇒ Electronic Catalogue of Original Parts .

Gearbox oil capacity ⇒ [page 1](#) .

- Remove air filter (if it was not yet removed) ⇒ Engine ⇒ Rep. Gr. 23 .



- Remove reversing light switch -F4- -arrow 1-.
- Insert hose with hopper into the location hole of the reversing light switch and pour in gear oil.
- Install reversing light switch -F4- -arrow 1- and tighten to tightening torque ⇒ [page 112](#) .
- Inspect function of shift mechanism. ⇒ [page 71](#)
- Install air filter ⇒ Engine ⇒ Rep. Gr. 23 .



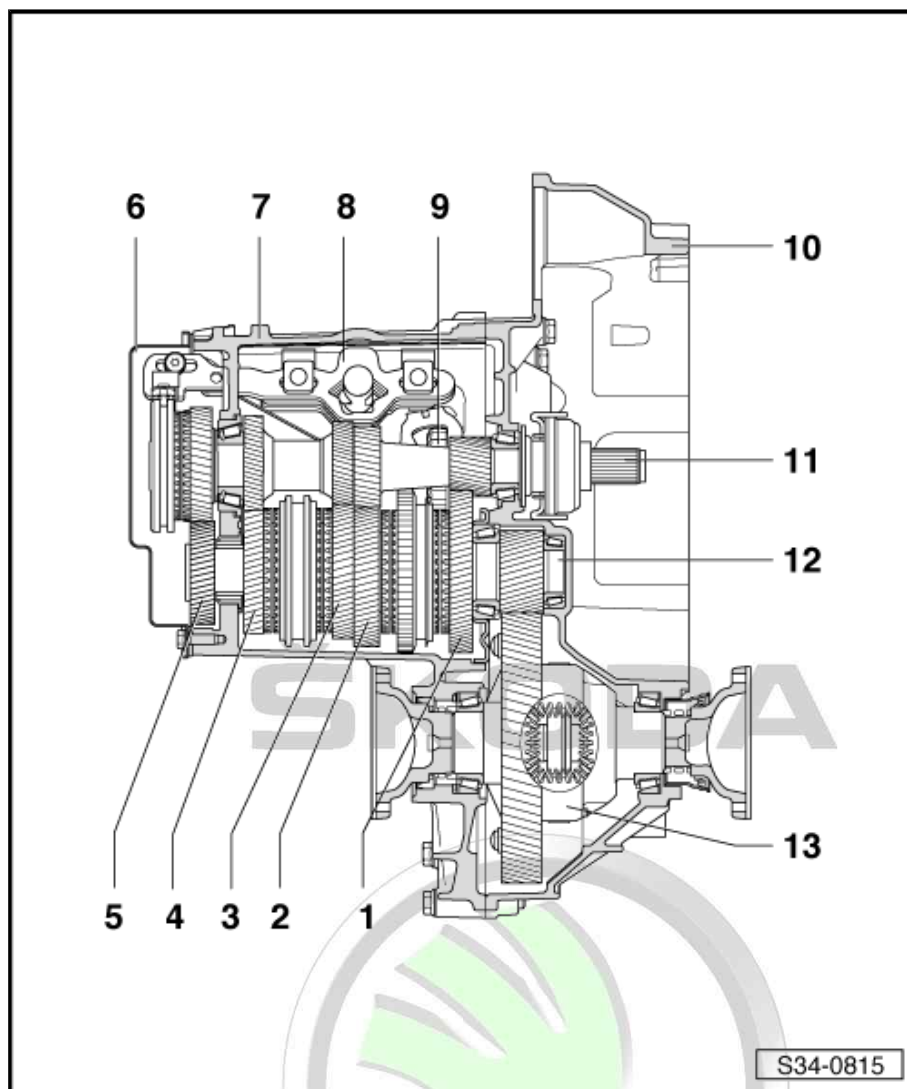
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4 Disassembling and assembling the gearbox

4.1 Gearbox - Summary of components

- 1 - 1st gear
- 2 - 2nd gear
- 3 - 3rd gear
- 4 - 4th gear
- 5 - 5th gear
- 6 - Cover for gearbox housing
- 7 - Gearbox housing
- 8 - Shift mechanism
□ (Gearshift forks)
- 9 - Reverse gear
- 10 - Clutch housing
- 11 - Drive shaft
- 12 - Output shaft
- 13 - Differential gear



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4.2 Summary of components

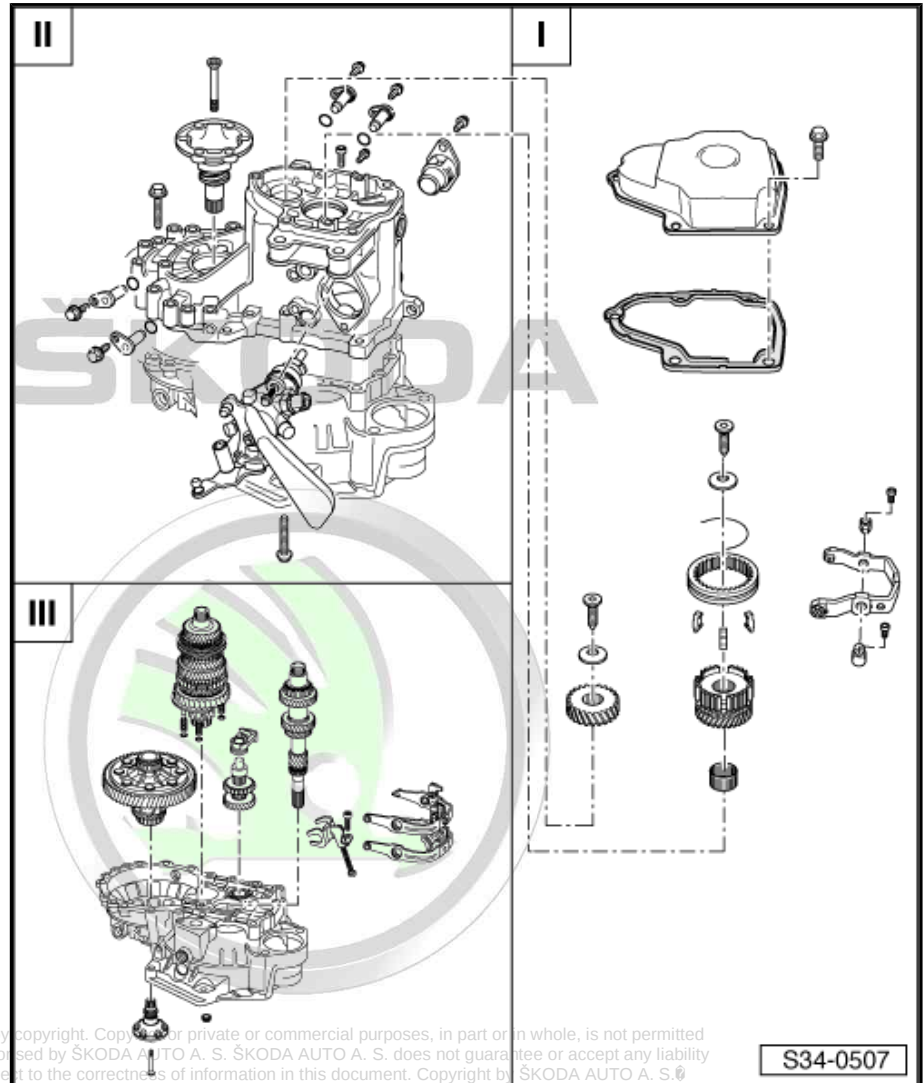
Mounting sequence - Removing and installing gearbox housing cover and 5th gear ⇒ [page 89](#)

Mounting sequence - completely disassembling and assembling the gearbox ⇒ [page 94](#)

I - Summary of components - Removing and installing gearbox housing cover and 5th gear ⇒ [page 86](#)

II - Summary of components - Removing and installing gearbox housing and shift mechanism ⇒ [page 87](#)

III - Summary of components - Removing and installing the drive shaft, output shaft, differential gear and shift forks ⇒ [page 88](#)



4.3 Removing and installing gearbox housing cover and 5th gear

1 - 18 Nm

- ☐ for cover for gearbox housing

2 - Cover for gearbox housing



Note

If the gearbox housing cover is removed and refitted with the gearbox mounted, the gear oil must be drained and refilled ➔ [page 81](#).

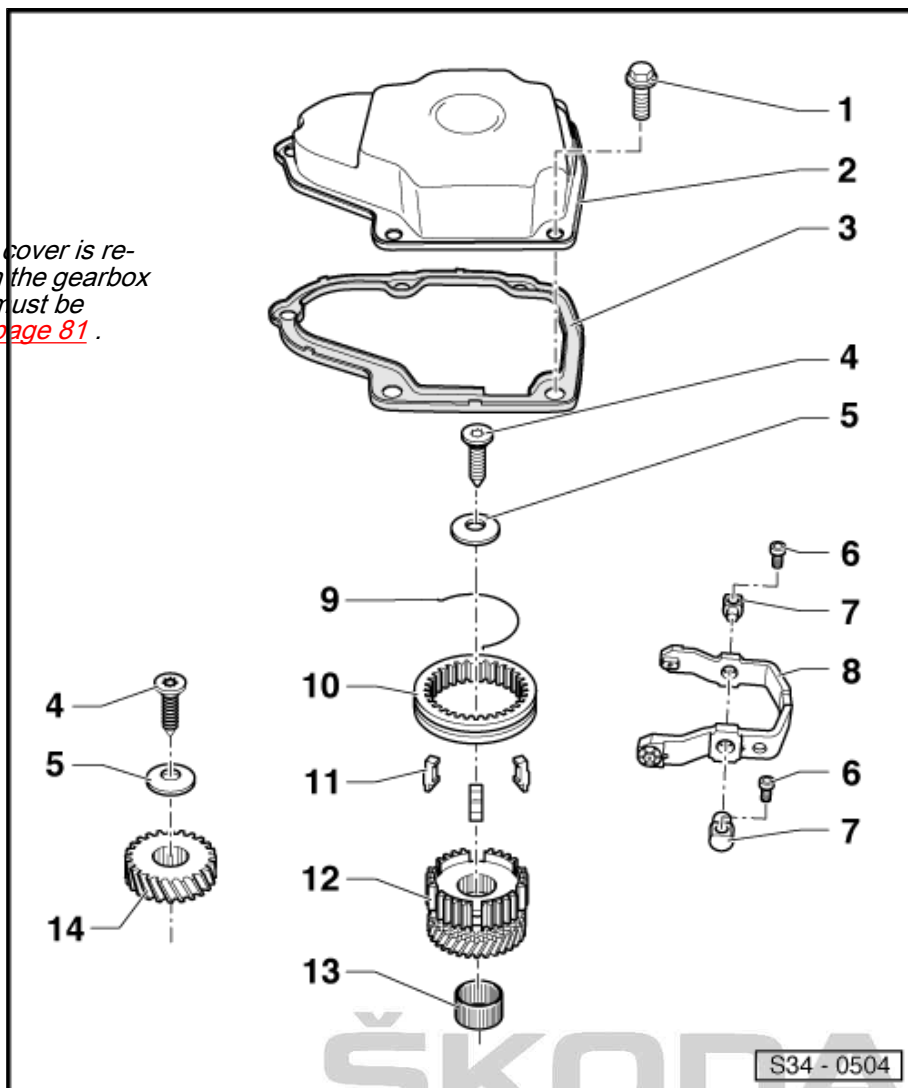
When removing the cover, ensure that any remaining oil still flows out.

Therefore, after fitting the cover, absolutely fill up with 1.8 ltr. of gear oil.

3 - Gasket

4 - 80 Nm and torque a further 90°

- ☐ holds the disc spring in position
- ☐ always replace ➔ Electronic Catalogue of Original Parts
- ☐ Clean the threaded holes of the fixing screws for the synchronizer body and the 5th gear pinion using a thread tap in order to remove locking agent residues; otherwise there is a risk that the screws will shear



5 - Disc spring

- ☐ Fitting position ➔ [page 104](#)

6 - 25 Nm

- ☐ for bearing pins on the gearbox housing

7 - Bearing pins

8 - 5th gear shift fork

- ☐ disassembling and assembling ➔ [page 114](#)
- ☐ adjust ➔ [page 105](#)

9 - Spring

- ☐ Fitting position ➔ [page 117](#)

10 - 5th gear sliding sleeve

- ☐ Fitting position ➔ [page 117](#)

11 - Arresters (3 pieces)

- ☐ Fitting position ➔ [page 117](#)



12 - Synchronizer body with sliding gear and synchronizer ring for 5th gear

- ☐ remove separately ➔ [page 89](#)
- ☐ remove together with gearbox housing ➔ [page 94](#)
- ☐ disassembling and assembling ➔ [page 117](#)

13 - Needle bearing

14 - 5th gear pinion

- ☐ remove separately ➔ [page 89](#)
- ☐ remove together with gearbox housing ➔ [page 94](#)
- ☐ Fitting position ➔ [page 103](#)

4.4 Removing and installing gearbox housing and shift mechanism

1 - 25 Nm

2 - Flange shaft with pressure spring

- ☐ removing and installing ➔ [page 144](#)
- ☐ complete ➔ [page 150](#)

3 - 25 Nm

- ☐ for reverse shaft support
- ☐ self-locking
- ☐ always replace ➔ Electronic Catalogue of Original Parts

4 - 30 Nm

- ☐ for reverse shaft support
- ☐ self-locking
- ☐ always replace ➔ Electronic Catalogue of Original Parts

5 - O-ring

- ☐ always replace ➔ Electronic Catalogue of Original Parts

6 - Bearing pins

7 - 25 Nm

8 - 25 Nm

9 - Screw cap

10 - 25 Nm

- ☐ for reverse shaft support
- ☐ always replace ➔ Electronic Catalogue of Original Parts

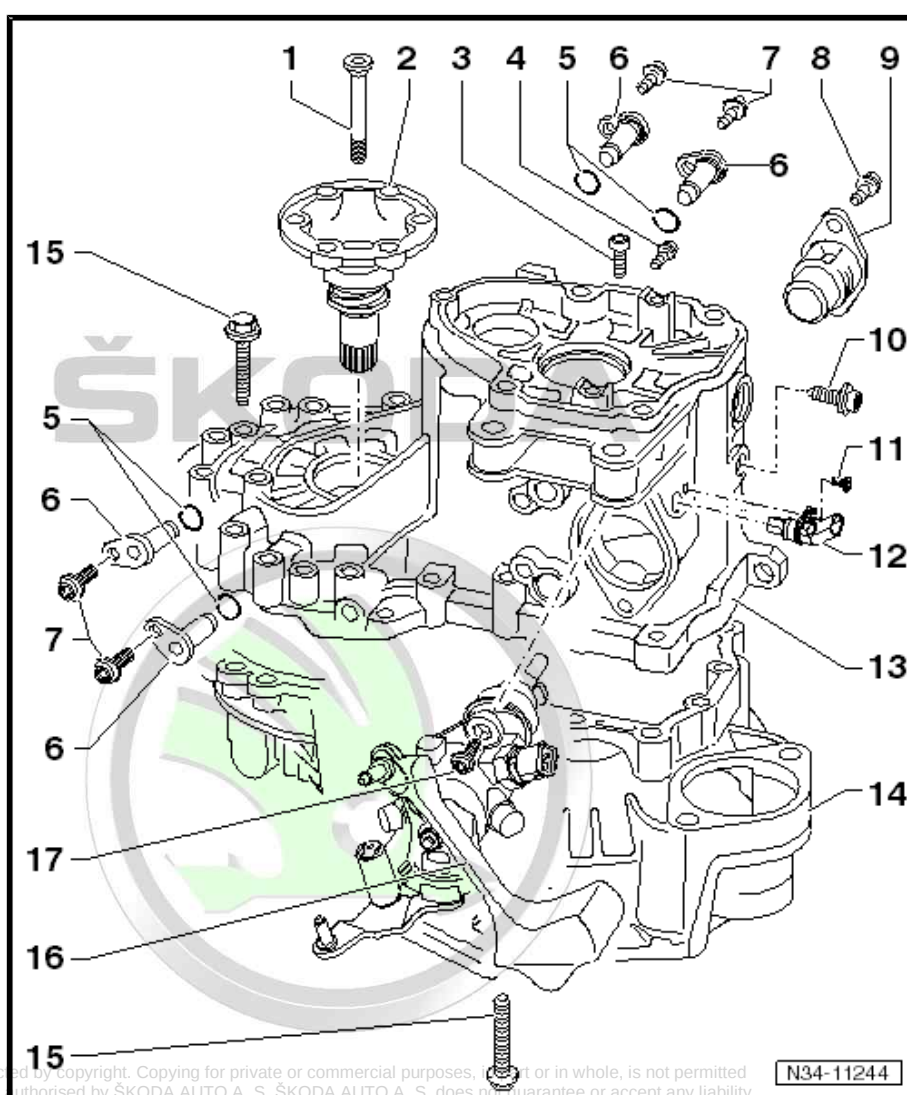
11 - Screw, 5 Nm

12 - Transmission neutral sender -G701-

- ☐ for vehicles with start-stop system

13 - Gearbox housing

- ☐ remove together with 5th gear ➔ [page 94](#)
- ☐ repairing ➔ [page 106](#)



14 - Clutch housing

- ☐ repairing ⇒ [page 106](#)

15 - 25 Nm and torque a further 90°

- ☐ always replace ⇒ Electronic Catalogue of Original Parts

16 - Shift mechanism

- ☐ (Gearshift shaft with gearshift cover)
- ☐ repairing ⇒ [page 112](#)

17 - 25 Nm

4.5 Removing and installing the drive shaft, output shaft, differential gear and shift forks

1 - Differential gear

- ☐ disassembling and assembling ⇒ [page 150](#)

2 - O-ring

- ☐ 4 pieces
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

3 - Output shaft

- ☐ disassembling and assembling ⇒ [page 128](#)

4 - reverse shaft support

- ☐ disassembling and assembling ⇒ [page 141](#)

5 - Reverse shaft

- ☐ disassembling and assembling ⇒ [page 141](#)

6 - Drive shaft

- ☐ disassembling and assembling ⇒ [page 117](#)

7 - Gearshift fork reverse gear

- ☐ disassembling and assembling ⇒ [page 114](#)
- ☐ Fitting position ⇒ [page 99](#)

8 - 25 Nm

9 - Shift mechanism

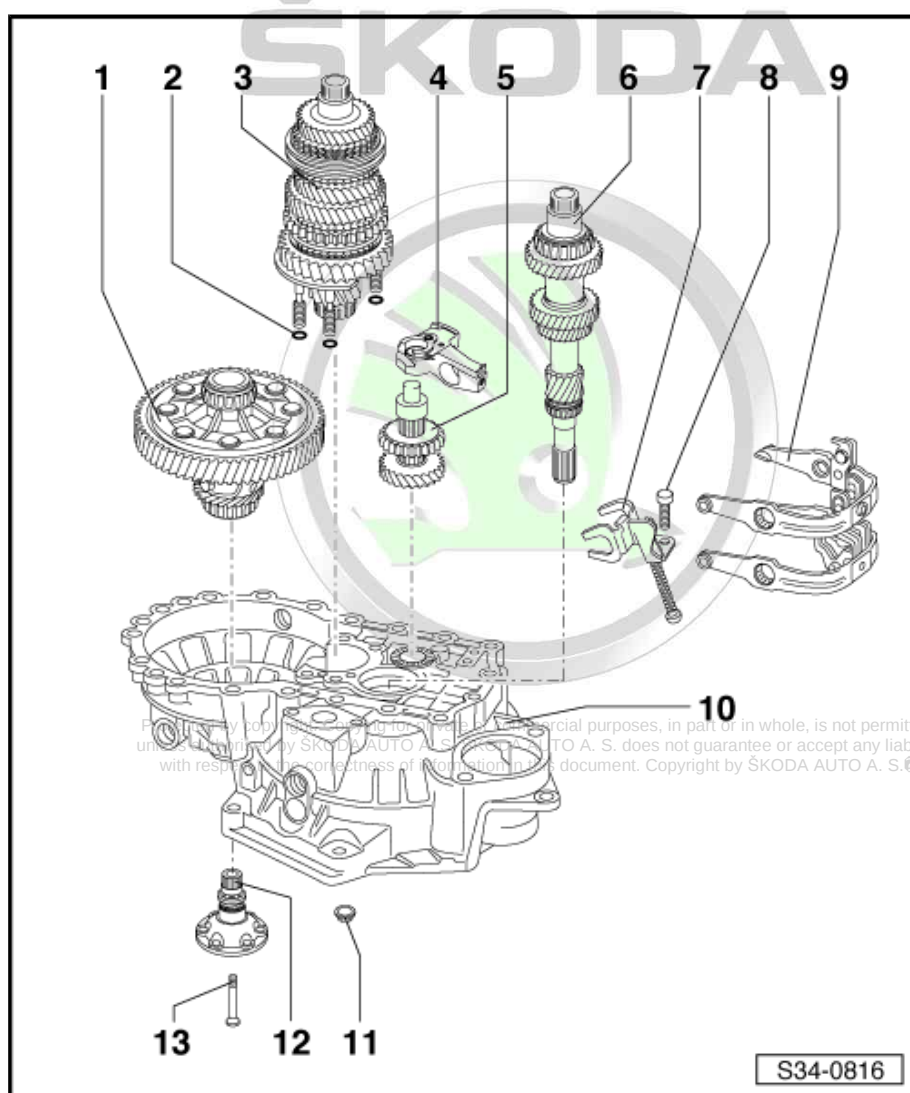
- ☐ (Gearshift forks)
- ☐ disassembling and assembling ⇒ [page 114](#)

10 - Clutch housing

- ☐ repairing ⇒ [page 106](#)

11 - 25 Nm and torque a further 90°

- ☐ 4 nuts for bearing support
- ☐ always replace ⇒ Electronic Catalogue of Original Parts



12 - Flange shaft with pressure spring

- ☐ removing and installing ➔ [page 144](#)
- ☐ complete ➔ [page 150](#)

13 - 25 Nm

4.6 Mounting sequence - Removing and installing gearbox housing cover and 5th gear



Note

- ◆ *If it is intended to only remove the 5th gear, keep to the following work sequence.*
- ◆ *For this work sequence, the gear oil must not be drained. Once the cover is removed, then the cover side of the gearbox must point upwards.*
- ◆ *If it is intended to remove the gearbox housing, this work sequence must be observed: completely disassembling and assembling the gearbox ➔ [page 94](#).*

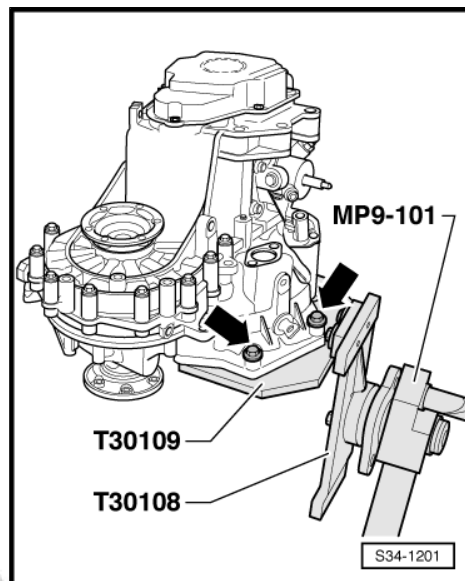
Special tools and workshop equipment required

- ◆ Drive bushing -MP3-402 (VW 244 B)-
- ◆ Supporting bridge -MP3-425 (30-211 A)-
- ◆ Pressure washer -MP3-456 (VW 447 i)-
- ◆ Insertion tool -MP3-466 (32-111)-
- ◆ Assembly device -MP6-414 (3253)-
- ◆ Assembly stand -MP9-101-
- ◆ Assembly device -T10030-
- ◆ Extractor -T10309-
- ◆ Supporting bridge -T10323-
- ◆ Gearbox mount -T30108-
- ◆ Gearbox mount -T30109 (VW 353)-
- ◆ Two-arm extractor -Kukko 20/10- with hook -T10040/2A+/3-
- ◆ Hot air blower , e.g. -V.A.G 1416-
- ◆ Screw M 10 x 20 mm

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4.6.1 Removing gearbox housing cover and 5th gear

- Secure gearbox to gearbox mount -T30109 (VW 353)- with screws -arrows-.
- Remove clutch release lever with release bearing
⇒ [page 29](#) .



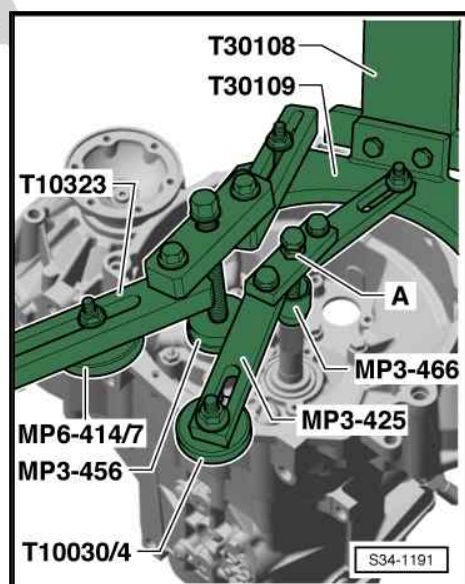
- If the 5th gear is installed again, then the input shaft and output shaft bearings must not be damaged.
- Therefore, while securing the gearbox to the gearbox mount -T30109 (VW 353)- the following tools must be installed for support:

Below the drive shaft:

- ◆ Supporting bridge -MP3-425 (30-211 A)-
- ◆ Insertion tool -MP3-466 (32-111)-
- ◆ Thrust piece -T10030/4-
- The drive shaft must only be supported with the insertion tool -MP3-466 (32-111)- at a later stage.

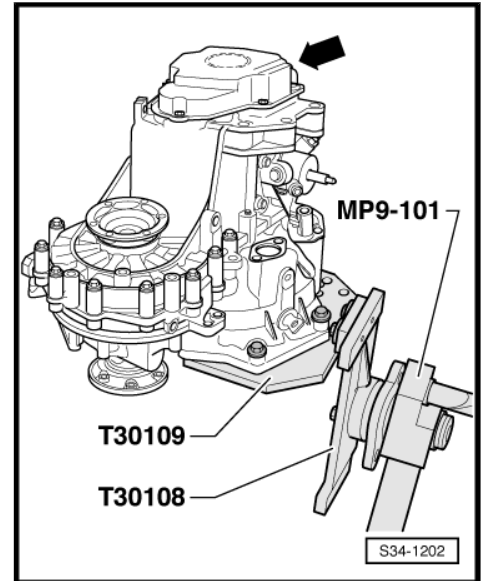
Below the bearing support for the output shaft:

- ◆ Supporting bridge -T10323-
- ◆ Pressure plate -MP6-414/7 (3253/7)- from assembly device -MP6-414 (3253)-
- ◆ Pressure washer -MP3-456 (VW 447 i)-

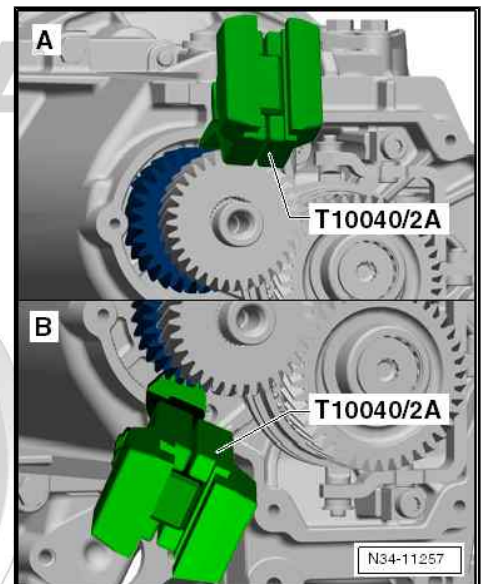


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- Unscrew the gearbox housing cover -arrow-.



- Check whether the extraction hooks -T10040/2A- can be correctly positioned under the 5th gear pinion.



The extraction hooks -T10040/2A- cannot be correctly positioned.

-A- the extraction hooks -T10040/2A- come prematurely in contact with: ♦ the gearbox housing wall ♦ the ribbing in the gearbox housing below the 5th gear pinion	Remove "together": "5th gear synchronizer body", "5th gear pinion" and "gearbox housing" ⇒ page 94 Right. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by ŠKODA AUTO A. S. ŠKODA AUTO A. S. does not guarantee or accept any liability for the use of the information. Copyright by ŠKODA AUTO A. S. ©
-B- the extraction hooks -T10040/2A- come in contact with the ribbing in the gearbox housing below the 5th gear pinion.	

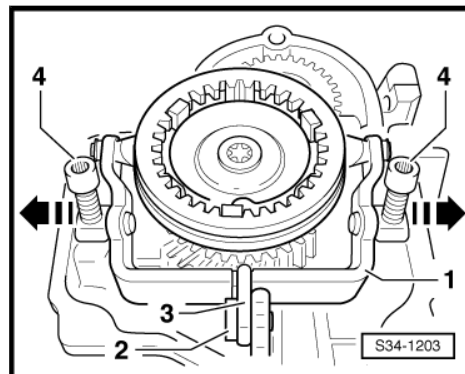
The extraction hooks -T10040/2A- can be correctly positioned.

The 5th gear can be removed separately ⇒ [page 92](#) .

Remove 5th gear separately

Remove 5th gear shift fork as follows:

- Cover the openings with a cloth.
- Put shift fork -1- in Neutral position.
- Remove screw -2- with 5th gear shift gate -3-.
- Remove screws -4- for the bearing pins.
- Remove bearing pins -direction of arrow-.
- Remove 5th gear shift fork.

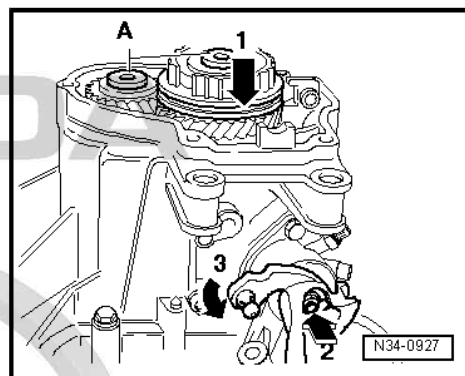


Note

The 5th gear sliding sleeve must not be removed.

- Unscrew screws -A- for synchronizer body and 5th gear pinion. To this end engage the 5th gear -arrow 1- and 1st gear -arrows 2- and -3-.

The input and output shafts are blocked after introducing the two gears, the synchronizer body and pinion cannot rotate. Now it is possible to release the two bolts.



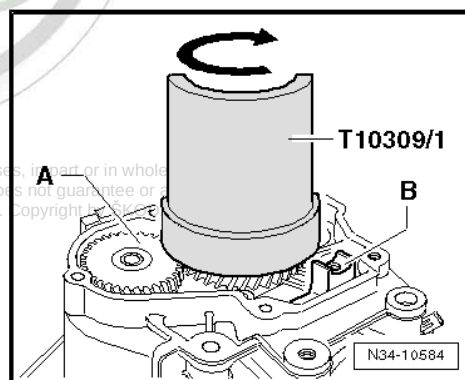
Note

If the shafts are not replaced, carefully clean the threaded holes e.g. using a screw-tap in order to remove locking agent residues.

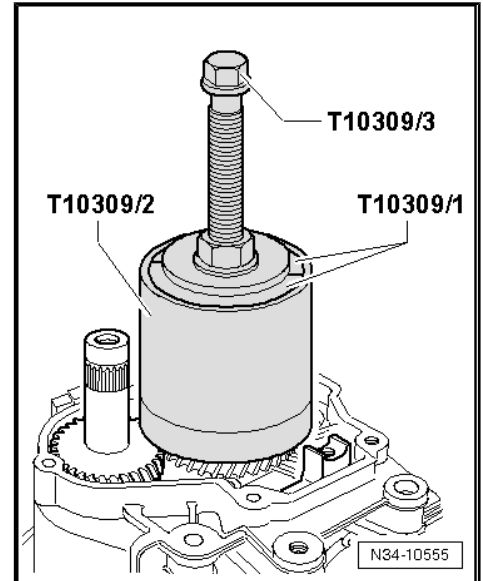
Pull off 5th gear synchronizer body together with sliding sleeve and arresters.

Use extractor - T10309- .

- First of all insert half of the bushing -T10309/1- between the 5th gear pinion -A- and the support of the 5th gear shift fork -B-.
- Half of the bushing -T10309/1- must be fitted below the synchronizer ring.
- If necessary, half of the bushing must be pressed into the end position.
- Turn half of the bushing -T10309/1- to the opposite side -direction of arrow-.



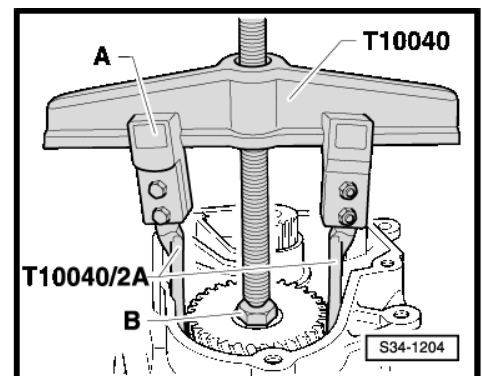
- Insert the threaded insert -T10309/3- into half of the bushing .
- Now insert the other half of the bushing -T10309/1- and place the pipe -T10309/2- on the assembly device.
- Check the synchronizer body for damage after removing.
- Replace 5th gear synchronizer ring.
- Remove the 5th gear sliding gear with needle bearing.



- Remove the 5th gear pinion as follows:
- First of all insert the extraction hook -A-.
- B - Screw M10 x 20, SW 17
- If necessary, heat the gear pinion using the hot-air blower - V.A.G 1416- .

i Note

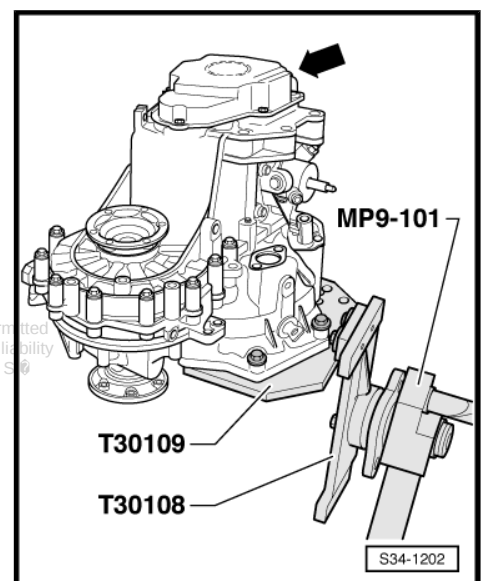
- ◆ The 5th gear pinion can also be removed using the two-arm extractor -Kukko 20/10- in combination with the extraction hooks -T10040/2A- .
- ◆ When pulling off the gear pinion make sure the hooks do not bend outwards. Check 5th gear for damage after removing.



4.6.2 Mount 5th gear and cover for gearbox housing

Mount 5th gear ➔ [page 102](#) .

- Mount the cover for the gearbox housing -arrow- and tighten the screws to the specified tightening torque ➔ [page 86](#) .
- Mount clutch release lever with release bearing ➔ [page 29](#) .
- Check gear oil, top up if necessary ➔ [page 81](#) .



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4.7 Mounting sequence - completely disassembling and assembling the gearbox

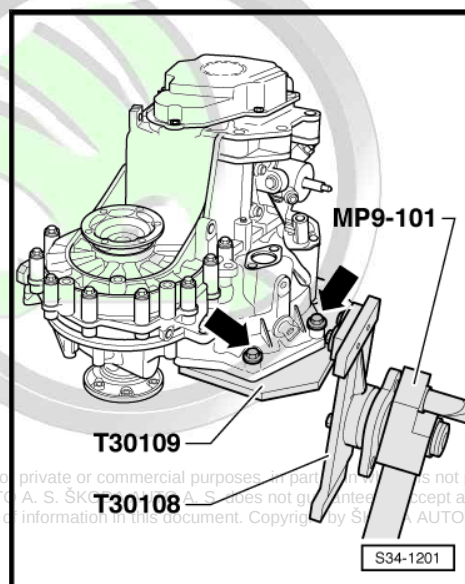
Removing and installing cover for gearbox housing, clutch housing, gearshift shaft with gearshift cover, drive shaft, output shaft, differential gear and gearshift mechanism

Special tools and workshop equipment required

- ◆ Driver -MP1-304 (10-206)-
- ◆ Drive bushing -MP3-402 (VW 244 B)-
- ◆ Supporting bridge -MP3-425 (30-211 A)-
- ◆ Pressure washer -MP3-456 (VW 447 i)-
- ◆ Insertion tool -MP3-466 (32-111)-
- ◆ Assembly device -MP6-414 (3253)-
- ◆ Assembly stand -MP9-101-
- ◆ Assembly device -T10030-
- ◆ Supporting bridge -T10323-
- ◆ Extractor plate -T10408- with pressure pieces -T10408/2-
- ◆ Gearbox mount -T30108-
- ◆ Gearbox mount -T30109 (VW 353)-
- ◆ Extractor (2 pieces) e.g. -Kukko 18/1-
- ◆ Hot air blower , e.g. -V.A.G 1416-
- ◆ Sealant -AMV 188 200 03-
- ◆ Bolts M 8 x 100 mm

4.7.1 Disassembling gearbox

- Secure gearbox to gearbox mount -T30109 (VW 353)- with screws -arrows-.
- Place catch pan underneath.
- Drain out gear oil ⇒ [page 81](#) .
- Remove the clutch release lever together with the clutch release bearing and the guide bushing ⇒ [page 29](#) .



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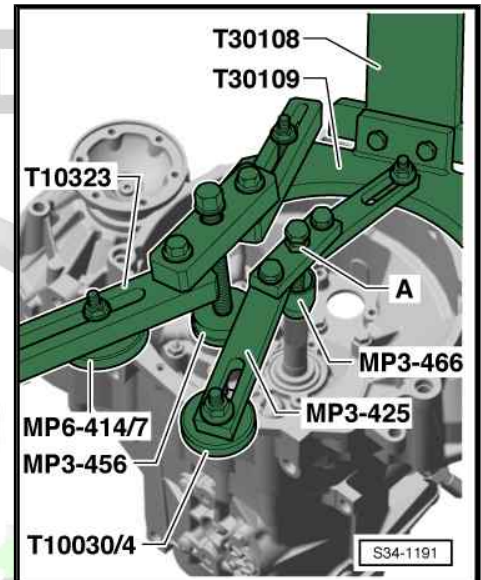
- The bearing for the input shaft and the output shaft must not be damaged when removing and installing the 5th gear.
- Therefore, while securing the gearbox to the gearbox mount - T30109 (VW 353)- the following tools must be installed for support:

Below the drive shaft:

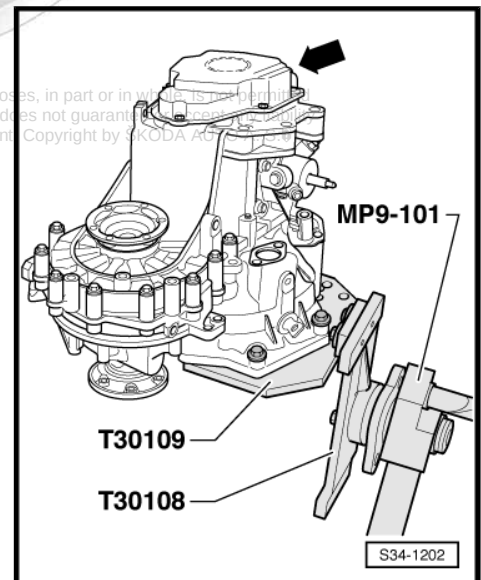
- ◆ Supporting bridge -MP3-425 (30-211 A)-
- ◆ Insertion tool -MP3-466 (32-111)-
- ◆ Thrust piece -T10030/4-
- Lock the screw of the supporting bridge -MP3-425 (30-211 A)- with the nut -A-.

Below the bearing support for the output shaft:

- ◆ Supporting bridge -T10323-
- ◆ Pressure plate -MP6-414/7 (3253/7)- from assembly device - MP6-414 (3253)-
- ◆ Pressure washer -MP3-456 (VW 447 i)-
- Unscrew the gearbox housing cover -arrow-.



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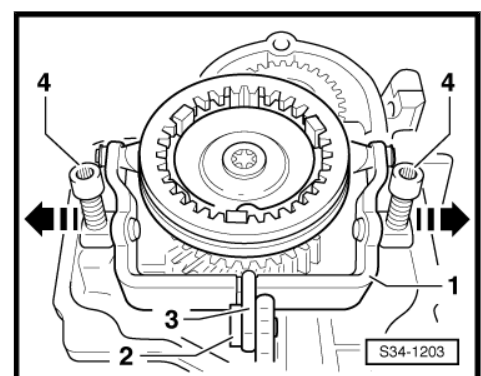
Remove 5th gear shift fork as follows:

- Put shift fork -1- in Neutral position.
- Remove screw -2- with 5th gear shift gate -3-.
- Remove screws -4- for the bearing pins.
- Remove bearing pins -direction of arrow-.
- Remove 5th gear shift fork.



Note

The 5th gear sliding sleeve must not be removed.





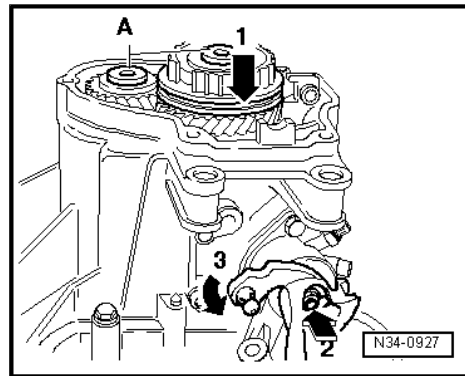
- Unscrew screws -A- for synchronizer body and 5th gear pinion. To this end engage the 5th gear -arrow 1- and 1st gear -arrows 2- and -3-.

The input and output shafts are blocked after introducing the two gears, the synchronizer body and pinion cannot rotate. Now it is possible to release the two bolts.

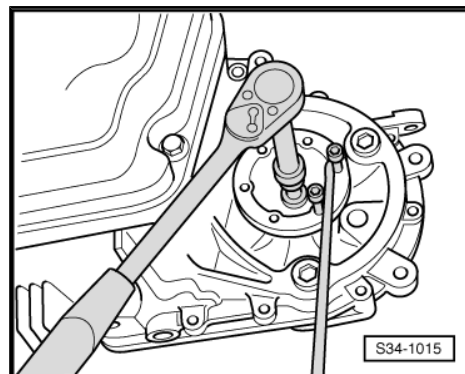


Note

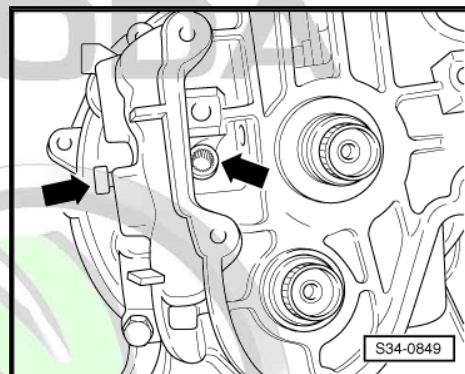
If the shafts are not replaced, carefully clean the threaded holes e.g. using a screw-tap in order to remove locking agent residues.



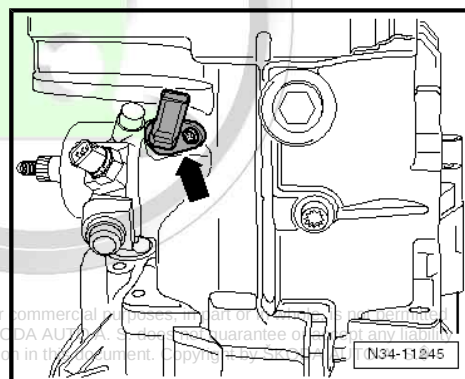
- Remove both flange shafts. To do so secure the flange shaft with a drift to prevent it from turning and release screw.
- Remove both flange shafts with pressure springs, stop discs and conical rings.



- Remove both screws -arrows- for reverse shaft support.

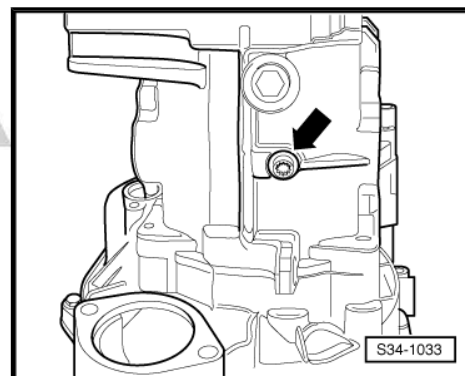


- Gearbox for vehicles with the start-stop system: remove the transmission neutral sender -G701- -arrow-.

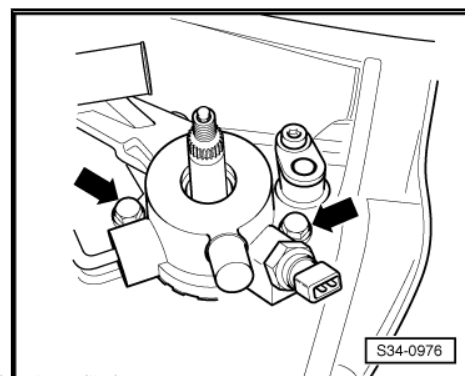


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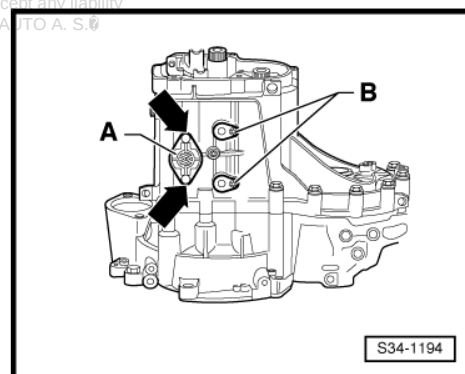
- Now remove the 3rd screw -arrow- for reverse shaft support.



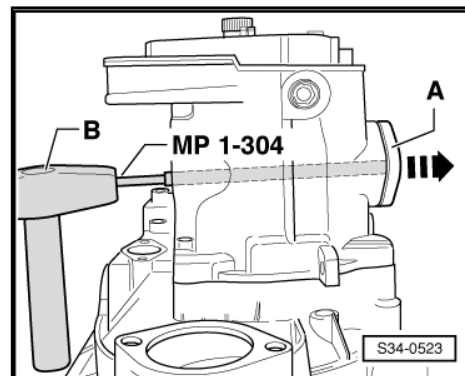
- Remove gearshift shaft with cover. Put the gearshift shaft into Neutral. Subsequently unscrew screws -arrows- and remove the gearshift shaft from the gearbox housing.



- Remove screws -arrows- from the cap -A- and the bearing pins -B- at the bottom of the gearbox.



- Carefully remove the screw cap -A- with driver -MP1-304 (10-206)- and hammer -B-.

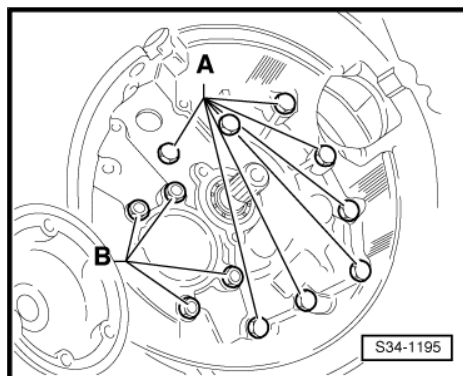


- Release screws -A-, that serve to secure the gearbox housing from the clutch housing.



Note

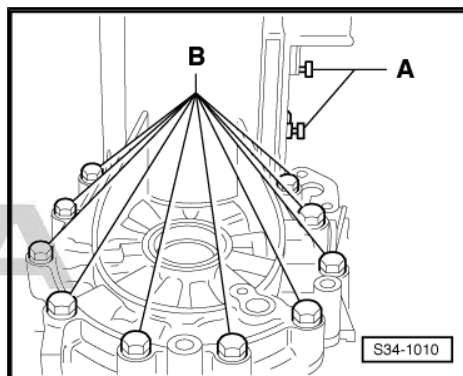
Do not remove nuts -B- for the output shaft bearing support.



- Remove bearing pins -A- on the top side of the gearbox and fixing screws -B- for the gearbox housing on the clutch housing near the differential gear.

Remove the following component parts together with the gearbox housing:

- ◆ 5th gear synchronizer body
- ◆ 5th gear pinion



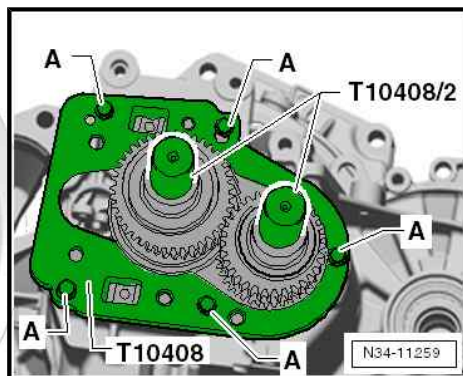
Use the extractor plate -T10408- in combination with the following tools:

- ◆ Pressure plates -T10408/2-
- ◆ Extractors Kukko 18/1 (2 pieces)
- Tighten the extractor plate -T10408- in the threaded bores for the cover of the gearbox housing.

A - Screws M7 x 35 with washers

Tightening torque - 18 Nm

- Position the pressure pieces -T10408/2- on the shafts.

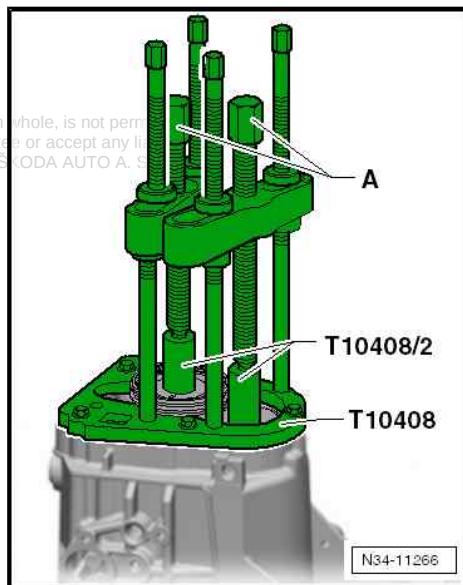


- 2 Install extractors , e.g. -Kukko 18/1- .
- Remove 5th gear synchronizer body, 5th gear pinion and gearbox housing by alternatively tightening the spindles -A- ($1/2$ turn) of the extractors , e.g. -Kukko 18/1- .

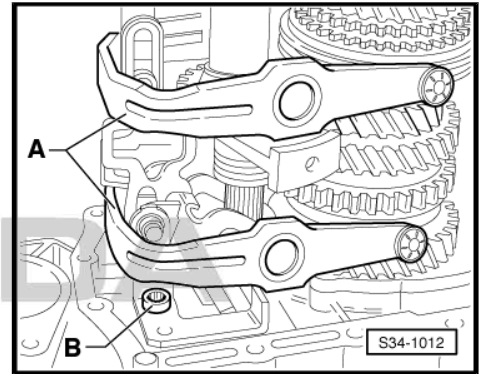


Note

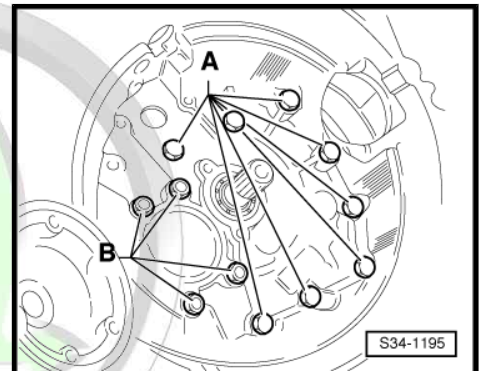
- ◆ *If necessary, heat the 5th gear pinion using the hot-air blower e.g. -V.A.G 1416- .*
- ◆ *Check the securing mechanism for the needle bearing/output shaft. If the 3 caulks are damaged, the needle bearing was shifted during the removal and must be replaced*
⇒ page 106 .



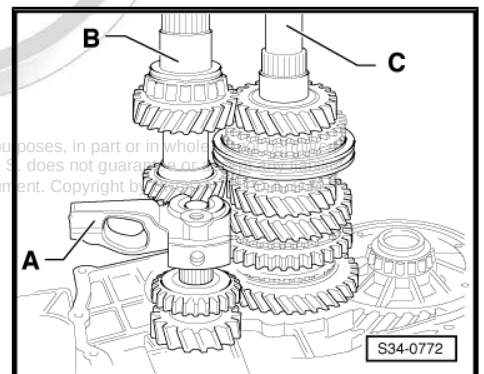
- Remove shift forks -A- together with shift rails.
- Unscrew shift mechanism/reverse gear -B-.



- Release nuts -B- for the bearing support/output shaft.



- Successively remove the reverse gear -A-, drive shaft -B- and output shaft -C- from the clutch housing.
- Remove differential gear.



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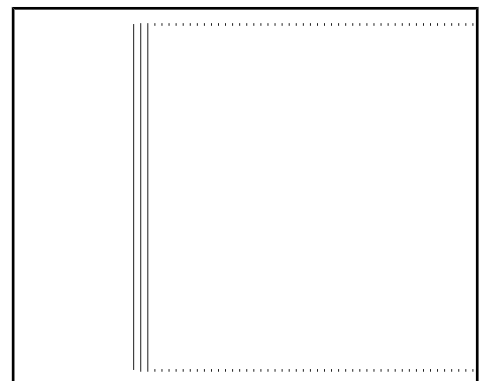
4.7.2 Assembling gearbox

- Insert differential gear.
- Always replace gasket rings -arrows- for bearing support/output shaft ⇒ Electronic Catalogue of Original Parts .



Note

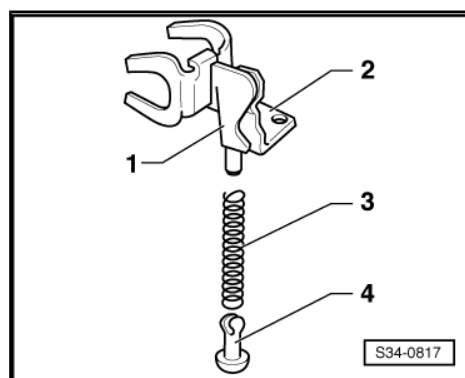
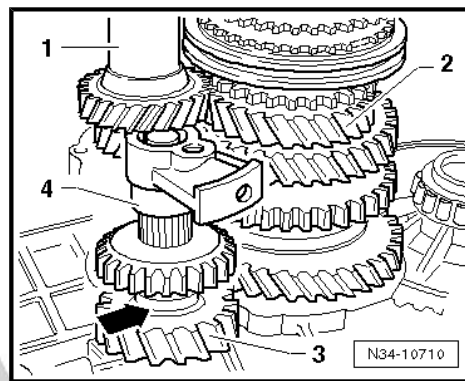
The figure only shows 3 of the 4 O-rings.



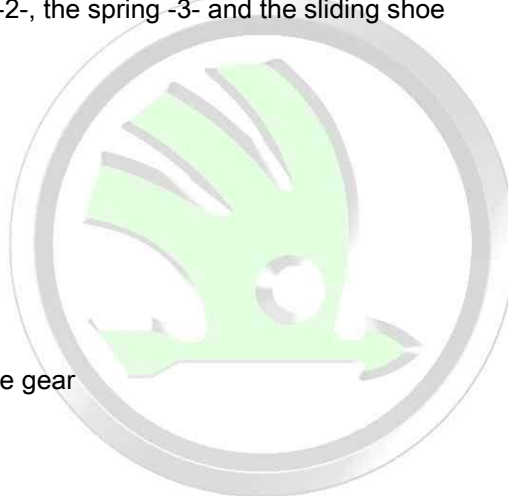
- Insert together the drive shaft -1- and the drive shaft -2-.
- Tighten nuts for the bearing support/output shaft to tightening torque ➔ [page 88](#).
- Position the reverse pinion -3- on the needle bearing in the clutch housing.

The shoulder -arrow- points away from the clutch housing.

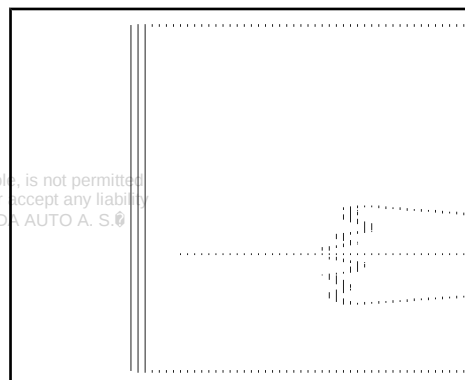
- Check if the reverse shaft -4- is complete ➔ [page 141](#); do not yet position the reverse shaft support onto the reverse shaft.
- Insert the reverse shaft in the clutch housing.
- Clean all threaded holes in the reverse shaft support to remove locking agent; clean with a screw-tap.
- Position reverse shaft support on the reverse shaft.
- Install the reverse gear shift fork -1- with the support for reverse gear shift fork -2-, the spring -3- and the sliding shoe -4-.



Fitting location of reverse gear

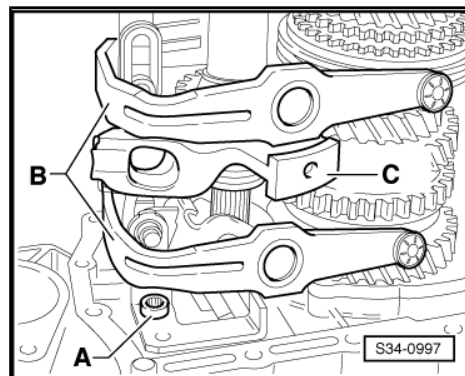


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- Screw on shift mechanism/reverse gear -A- and tighten to the specified tightening torque ➔ [page 88](#).
- Install shift forks -B- together with shift rails.

The stud -C- of the reverse shaft support is located in front of the shift rails.



- Screw the studs -A- M8 x 100 mm in the reverse shaft support, to ensure it is aligned once the gearbox housing has been fitted.
- Align shift rails.



Note

The shift segments must be positioned in the slots of the sliding sleeves.

- Apply sealant -AMV 188 200 03- uniformly on the sealing surface of the clutch housing.
- Position the gearbox housing and tighten connecting screws to the given tightening torque ⇒ [page 87](#) .

Insert the screws for the reverse shaft support -arrow- as follows:

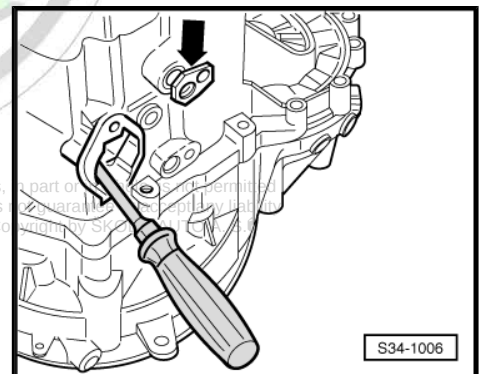
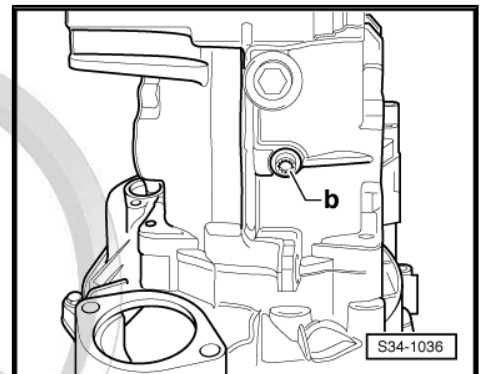
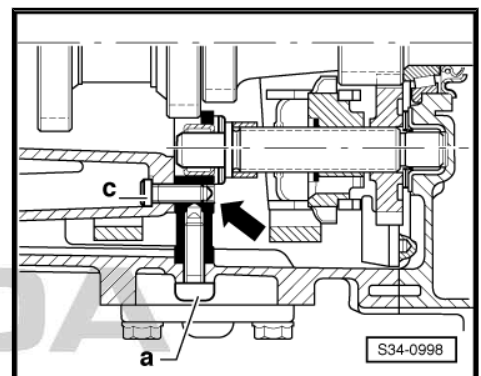
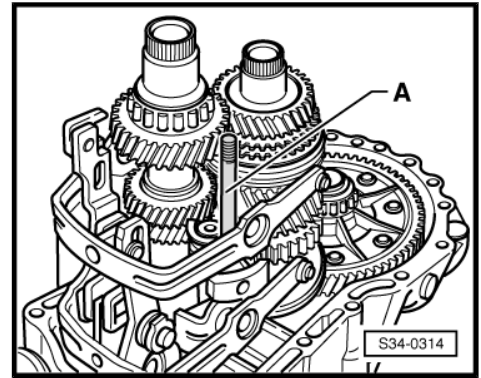
- Insert screw -a-, release pin screw M8 x 100 mm (⇒ fig. S34-0314) from the reverse shaft support, insert screw -b- and -c-.

Tightening sequence:

- 1 - Screw -a- 30 Nm
- 2 - Screw -b- 25 Nm ⇒ fig. S34-1036
- 3 - Screw -c- 25 Nm

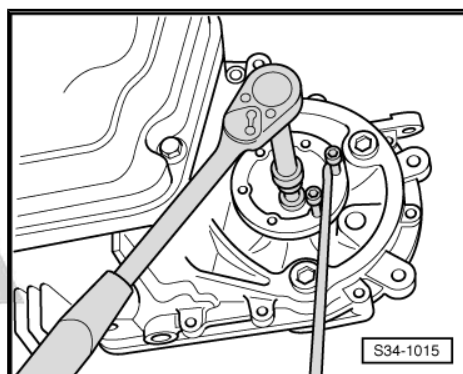
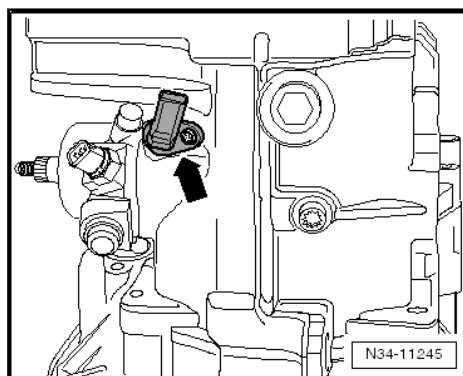
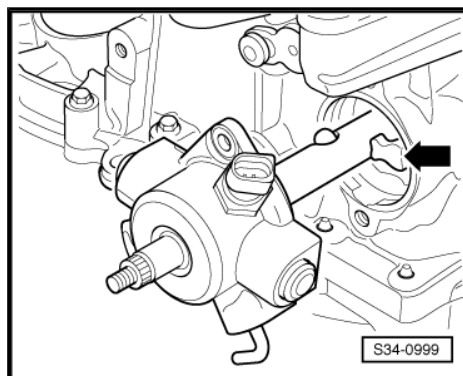
- Tighten screw -b- for support reverse shaft.

- Fit bearing pins -arrow- for shift forks. Align the shift mechanism with a screwdriver to ensure the relevant bearing pin can be fitted.
- Apply sealant -AMV 188 200 03- uniformly on the sealing surface of the screw cap.
- Fit gearshift shaft cover and tighten screws to tightening torque ⇒ [page 87](#) .



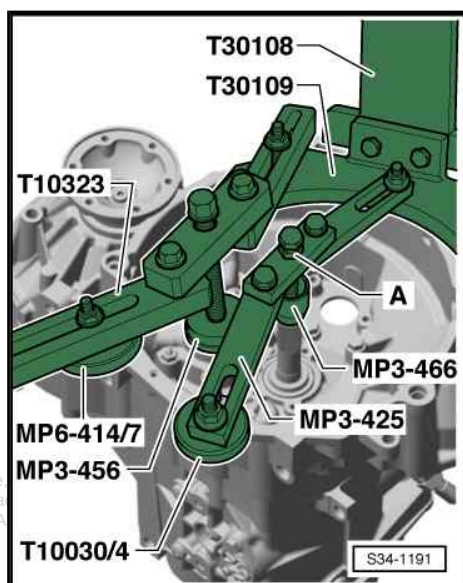
Install the gearshift shaft with cover as follows:

- Put the shift rails in neutral position.
- Apply sealant -AMV 188 200 03- uniformly on the sealing surface of the gearshift cover.
- Put the gearshift shaft into Neutral.
- Align the gearshift shaft in such a way that the shift finger -arrow 2- is inserted in the shift rails.
- Position the gearshift cover with gearshift shaft and tighten the screws to the specified tightening torque ⇒ [page 87](#) .
- Gearbox for vehicles with the start-stop system: insert the transmission neutral sender -G701- -arrow- and tighten the fixing screw to the specified tightening torque Pos. 11 ⇒ [page 87](#) .
- Install both flange shafts with pressure springs, stop discs and conical rings.



4.7.3 Mount 5th gear

- If the 5th gear is installed again, then the input shaft and output shaft bearings must not be damaged.
- Make sure that the supporting bridge -MP3-425 (30-211 A)- and the supporting bridge -T10323- are installed.
- Lock the screw of the supporting bridge -MP3-425 (30-211 A)- with the nut -A-.



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Fitting position of the 5th gear pinion

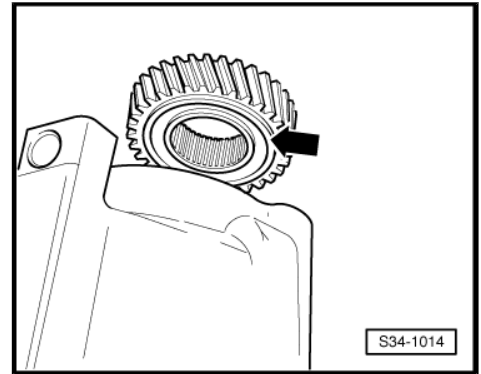
The round slot -arrow- points to the gearbox housing.

- Heat pinion to approx. 100 °C.

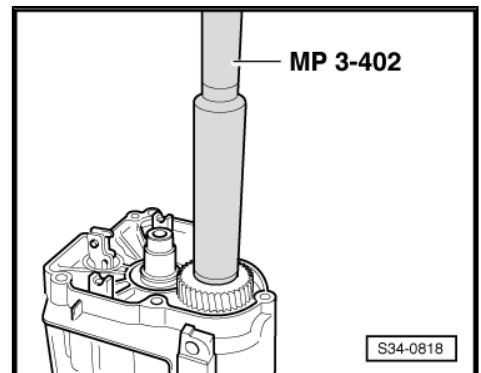


WARNING

Wear protective gloves!



- Drive in 5th gear pinion

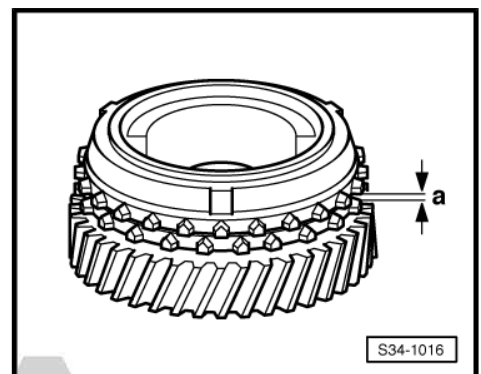


Checking 5th gear synchronizer ring for wear

- Press the synchronizer ring on the cone of the sliding gear and measure the clearance -a- with a feeler gauge before installing the sliding gear and the 5th gear synchronizer ring.

	Fitting dimension	Wear limit
Clearance -a-	1.1...1.7 mm	0.5 mm

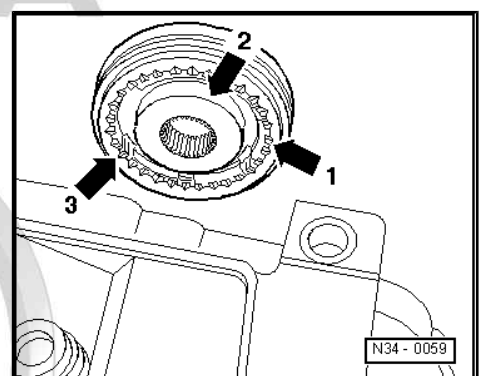
- Mount the 5th gear sliding gear with needle bearing.
- Position the 5th gear synchronizer ring on the sliding gear.
- If disassembled, assemble the 5th gear synchronizer body/sliding sleeve before installation ⇒ [page 117](#).



Fitting position of the 5th gear synchronizer body/sliding sleeve

The sharp teeth of the sliding sleeve -arrow 1- and the high collar of the synchronizer body -arrow 2- point towards the gearbox housing.

The supports -arrow 3- of the synchronizer body are on the same line as the integrated arresters of the synchronizer ring (arrows in Fig. N35-0018 ⇒ [page 104](#)).



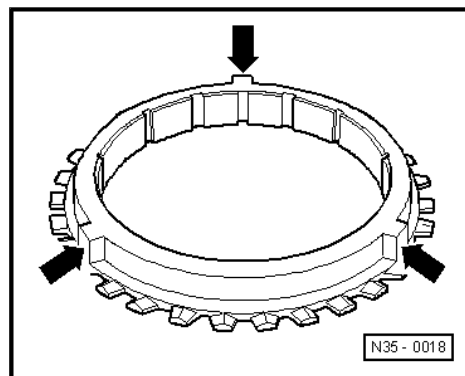
5th gear synchronizer ring with integrated arresters -arrows-

- Cover all openings with a cloth so that no foreign bodies can get into the gearbox.
- Heat 5th gear synchronizer body to approx. 100 °C.



WARNING

Wear protective gloves!

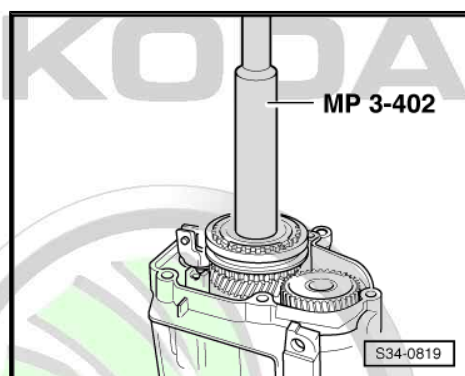


- Drive in 5th gear synchronizer body/sliding sleeve.



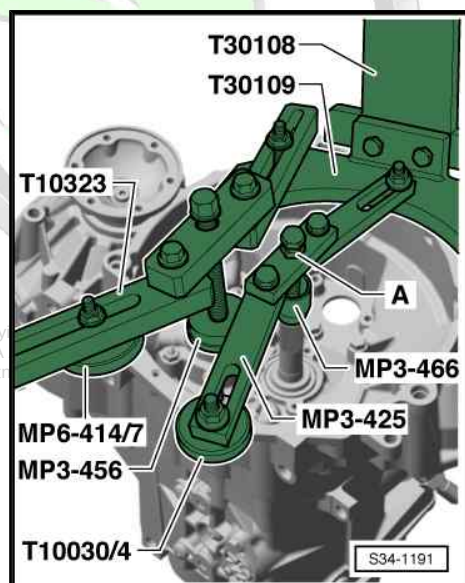
Note

Pay attention to the free travel of the synchronizer ring during the driving in operation.



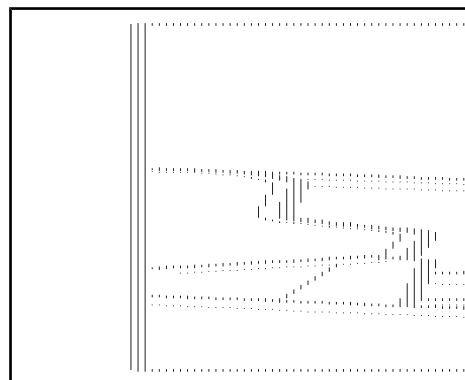
- Remove supporting bridge -MP3-425 (30-211 A)- and supporting bridge -T10323 -.

If it is not yet performed, clean the threaded holes of the fixing screws -A- for the 5th gear synchronizer body and the 5th gear pinion e.g. using a screw-tap in order to remove locking agent residues. Otherwise there is a risk that the screws will shear.



Fitting position of the disc springs for fixing screws on the 5th gear pinion and synchronizer body

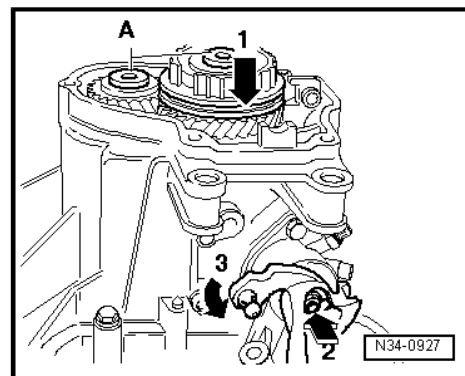
The curved side (concave side) -arrows- points to the screw head.



- Screw in new screws -A- for the synchronizer body and the 5th gear pinion and tighten to tightening torque ⇒ [page 86](#) . To this end engage the 5th gear -arrow 1- and 1st gear -arrows 2- and -3-.

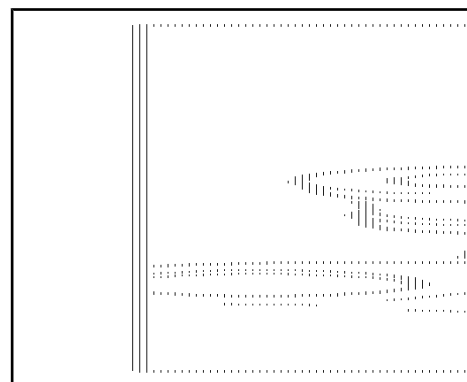
The input and output shafts are blocked after introducing the two gears, the synchronizer body and 5th gear pinion cannot rotate. Now it is possible to tighten the two bolts.

- Install 5th gear shift fork and 5th gear shift gate.



Set 5th gear as follows:

- Engage 5th gear.
- Release screw -1-. Press the sliding sleeve and the gear shift gate in the -direction of the arrow-.
- Tighten screw -1- to tightening torque ⇒ [page 114](#) .
- Control measurement when the 5th gear is engaged: A feeler gauge of 0.2 mm must not be pushed in between the sliding sleeve and the sliding gear. If necessary repeat the adjustment procedure.
- Remove 5th gear. The sliding sleeve must now be in Neutral. The 5th gear synchronizer ring must move freely.
- Shift through all gears consecutively.
- Mount cover for gearbox housing ⇒ [page 86](#) .
- Installing the guide bushing for clutch release lever and clutch release bearing ⇒ [page 29](#) .
- Pour in gear oil ⇒ [page 78](#) .



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5 Repairing gearbox housing and clutch housing

Special tools and workshop equipment required

- ◆ Drift -MP3-403 (VW 295)-
- ◆ Adapter -MP3-403/1 (VW 295 A)-
- ◆ Gearbox mount for assembly stand MP 9 - 101 -MP3-501-
- ◆ Pressure washer -MP3-455 (VW 447 H)-
- ◆ Pressure washer -MP3-460 (VW 512)-
- ◆ Pipe section -MP3-450 (VW 415 A)-
- ◆ Thrust piece -MP3-411 (VW 454)-
- ◆ Assembly device -MP3-434 (3066)- (spindle of assembly device)
- ◆ Pressure plate -T10148- (gearbox configuration: Gasket ring and bushing as one component).

Gearbox configuration: gasket ring and bushing as two components

- ◆ Thrust piece -MP3-420 (3124)-

Gearbox configuration: gasket ring and bushing as one component

- ◆ Multi-purpose tool -MP3-419 (VW 771)-

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1 - Gearbox housing

- ☐ when replacing: set the drive shaft ⇒ [page 123](#) and the differential gear ⇒ [page 156](#)

2 - Needle bearing

- ☐ for output shaft
- ☐ extracting ⇒ [page 109](#)
- ☐ fitting and securing ⇒ [page 109](#)

3 - Oil filler plug, 30 Nm

- ☐ without magnet
- ☐ the gear oil level can no longer be checked by unscrewing this plug ⇒ [page 81](#)
- ☐ if the gearbox was disassembled, it must be filled before installing ⇒ [page 1](#)

4 - Outer ring/tapered-roller bearing

- ☐ for output shaft
- ☐ removing and installing ⇒ [page 128](#)
- ☐ when replacing: set the output shaft ⇒ [page 138](#)

5 - Adjusting washer

- ☐ for output shaft
- ☐ Setting overview ⇒ [page 159](#)

6 - Adjusting washer

- ☐ for drive shaft
- ☐ Setting overview ⇒ [page 159](#)

7 - Outer ring/tapered-roller bearing

- ☐ for drive shaft
- ☐ removing and installing ⇒ [page 117](#)
- ☐ when replacing: set the drive shaft ⇒ [page 123](#)

8 - Outer ring/tapered-roller bearing

- ☐ for drive shaft
- ☐ removing and installing ⇒ [page 117](#)
- ☐ when replacing: set the drive shaft ⇒ [page 123](#)

9 - Needle bushing

- ☐ removing and installing ⇒ [page 141](#)

10 - Fitting sleeve

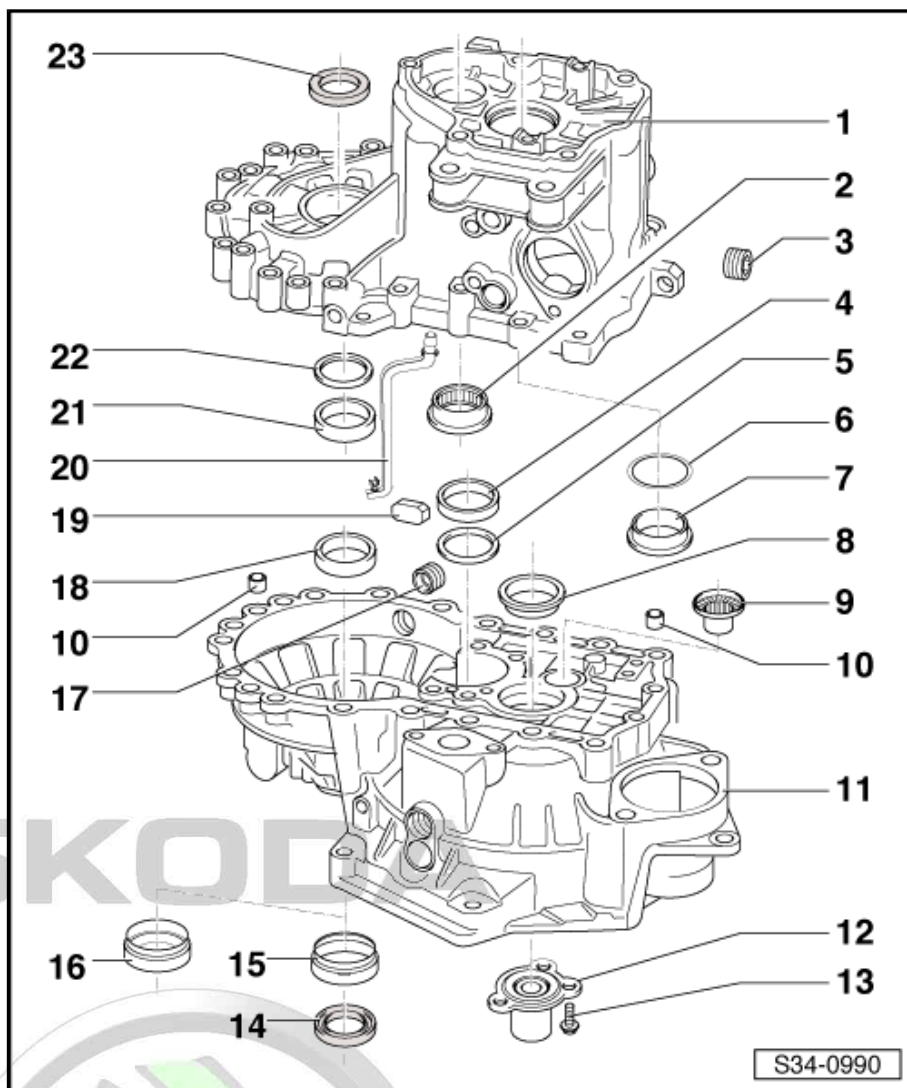
- ☐ (2 pieces)

11 - Clutch housing

- ☐ when replacing: setting overview ⇒ [page 159](#)

12 - Guide bushing with O-ring

- ☐ with gasket ring for drive shaft and vulcanized O-ring
- ☐ Driving out gasket ring ⇒ [page 109](#)





- ☐ Driving in gasket ring ⇒ [page 109](#)
- ☐ if O-ring is damaged, replace guide bushing and O-ring together ⇒ Electronic Catalogue of Original Parts

13 - 20 Nm

- ☐ self-locking
- ☐ always replace

14 - Sealing ring

- ☐ for right flange shaft
- ☐ replace ⇒ [page 145](#)
- ☐ Difference ⇒ [page 145](#)

15 - Bushing

- ☐ for gasket ring Pos.14
- ☐ levering out ⇒ [page 110](#)
- ☐ inserting ⇒ [page 110](#)

16 - Gasket ring and bushing as one component.

- ☐ replace ⇒ [page 147](#) gasket ring and bushing together in the event of damage
- ☐ removing ⇒ [page 110](#)
- ☐ installing ⇒ [page 110](#)
- ☐ Difference ⇒ [page 145](#)

17 - Oil drain plug, 30 Nm

- ☐ without magnet

18 - Outer ring/tapered-roller bearing

- ☐ for differential gear
- ☐ extracting and inserting ⇒ [page 150](#)
- ☐ when replacing: Set the differential gear ⇒ [page 156](#)

19 - Magnet

- ☐ is held in position by the separator surface of the housing

20 - Oil drip pan

- ☐ Install oil drip pan in the gearbox housing ⇒ [page 111](#)

21 - Outer ring/tapered-roller bearing

- ☐ for differential gear
- ☐ extracting and inserting ⇒ [page 150](#)
- ☐ when replacing: Set the differential gear ⇒ [page 156](#)

22 - Adjusting washer

- ☐ for differential gear
- ☐ Setting overview ⇒ [page 159](#)

23 - Sealing ring

- ☐ for left flange shaft
- ☐ replace ⇒ [page 144](#)

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Driving out needle bearing

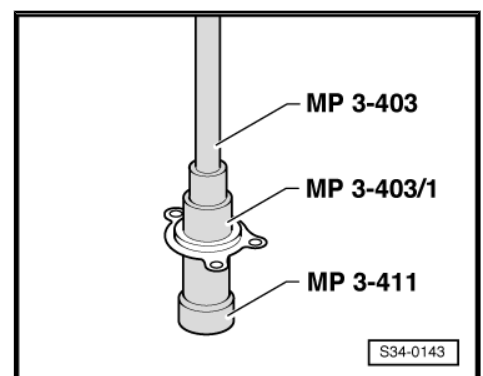
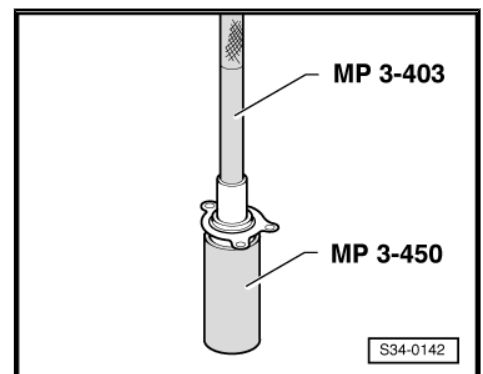
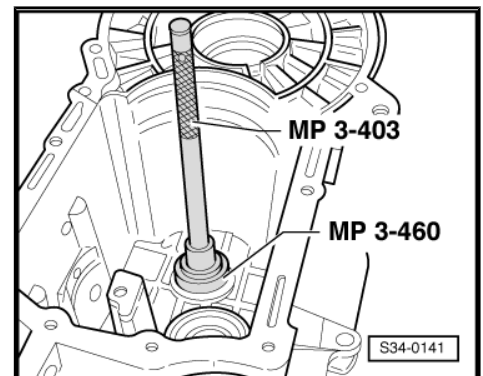
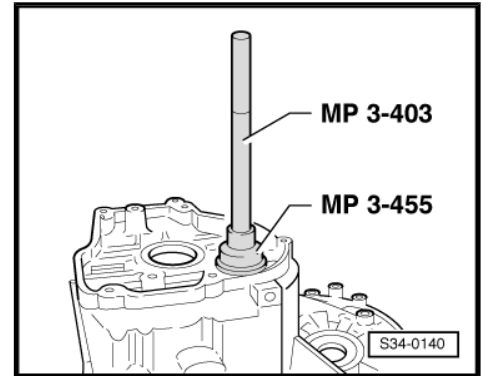
Drive in needle bearing up to stop

- Using a drift secure needle bearing in three points in the gear-box housing with 120° offset.

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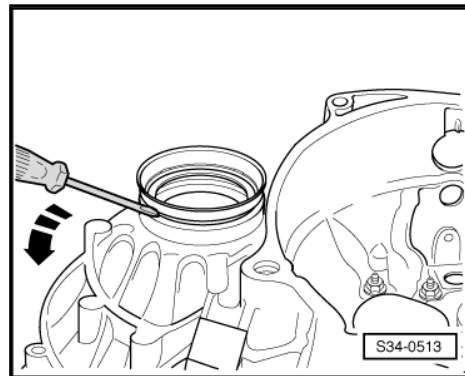
Driving out the guide bushing

Driving the gasket ring into the guide bushing up to the stop



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Levering out the bushing with a screwdriver -arrow-



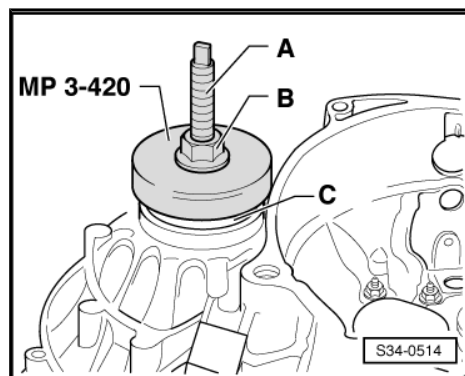
Inserting the bushing

- Screw spindle -A- of assembly device -MP3-434 (3066)- into the threaded part of the differential gear.
- By turning the nut -B- insert the bushing -C- over the pressure plate -MP3-420 (3124)- up to the stop.



Note

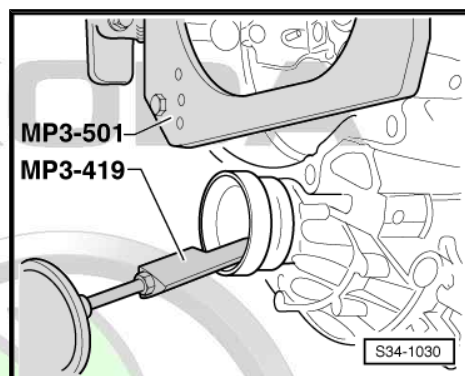
If the gearbox is disassembled press the bushing with pressure plate -MP3-420 (3124)- up to the stop.



Remove bushing and gasket ring

A shoulder is located in the inner diameter of the bushing.

- To pull out the gasket ring and the bushing insert multi-purpose tool -MP3-419 (VW 771)- at the shoulder into the bushing.
- Push-in forcefully the multi-purpose tool -MP3-419 (VW 771)- into the bushing when pulling out.



Press in bushing and gasket ring

- Clean point for gasket ring in gearbox.

A - Screw spindle of assembly device -MP3-434 (3066)- into the threaded part of the differential gear.

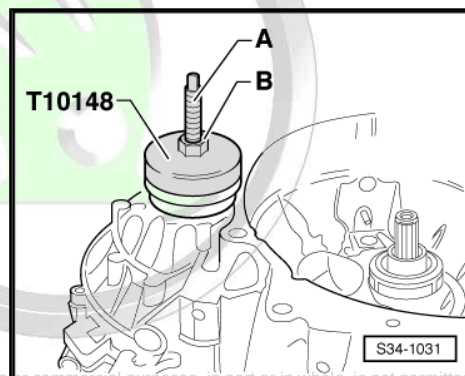
B - Nut M12

- By turning the nut -B- install the bushing over the pressure plate -T10148- up to the stop.



Note

If the gearbox is disassembled press the bushing with pressure plate -T10148- up to the stop.

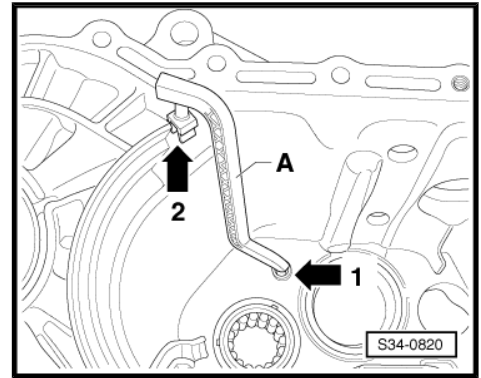


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Install oil drip pan -A- in the gearbox housing

- At the same time insert the oil drip pan into the hole -arrow 1- and the groove -arrow 2-.



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6 Repairing the shift mechanism on the gearbox

Special tools and workshop equipment required

- ♦ Pipe section -T10203-
- ♦ Pipe section -MP3-479 (VW 423)-
- ♦ Grease -G 000 100-

1 - Gearshift shaft with cover

- ☐ (Gearshift unit)
- ☐ the components cannot be separated

2 - Reversing light switch -F4-

- ☐ tighten to 20 Nm
- ☐ Grease peg with grease -G 000 100-

3 - Locking bolt

- ☐ for setting the gearshift mechanism
- ☐ removing ⇒ [page 113](#)
- ☐ pressing on ⇒ [page 113](#)

4 - Reversing lever

- ☐ out of plastic or metal
- ☐ Fitting position ⇒ [page 55](#)
- ☐ as of 06.07 the reversing level is plastic
- ☐ Removing and installing plastic relay lever together with cable lock ⇒ [page 61](#)
- ☐ If the relay lever is made of plastic, neither the bushings pos. 5 nor the lock washer pos. 10 are required

5 - Bushing

- ☐ is not required, if the relay lever is made of plastic

6 - Sealing ring

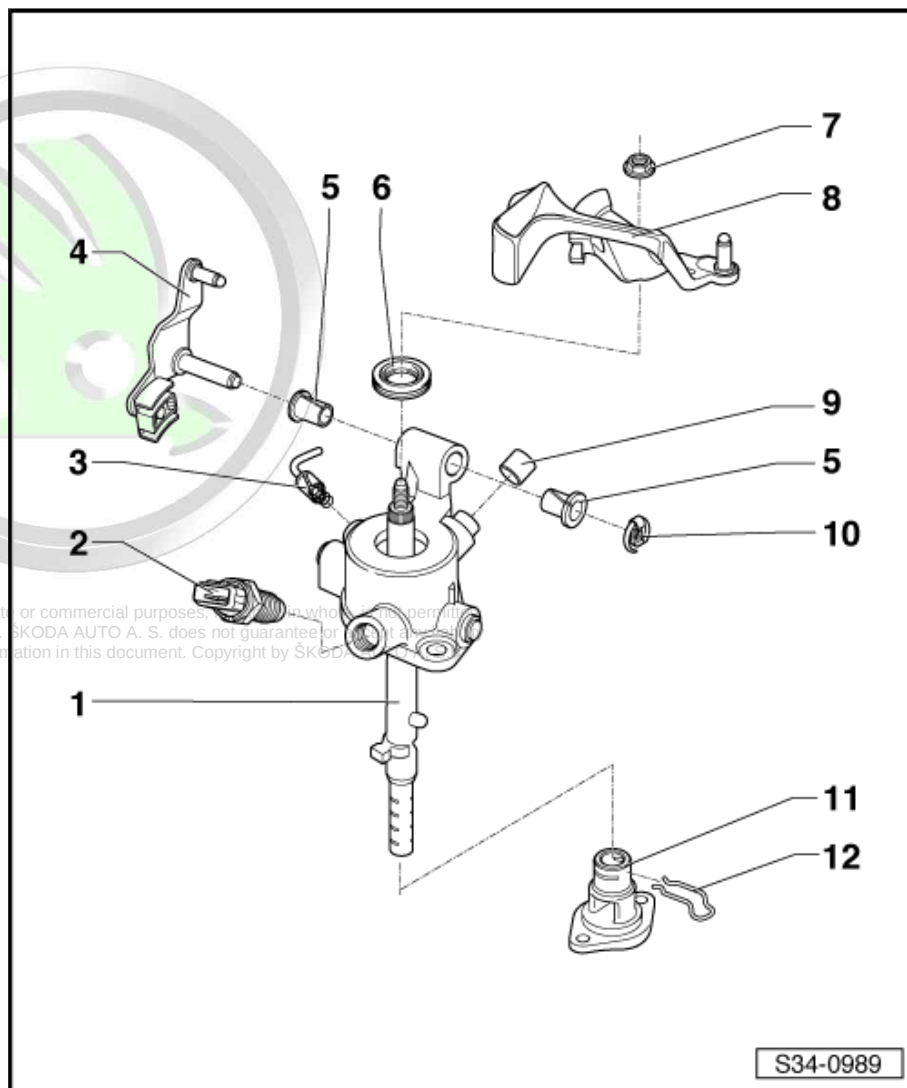
- ☐ release with a screwdriver
- ☐ inserting ⇒ [page 113](#)

7 - 23 Nm

- ☐ self-locking
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

8 - Gearshift lever

- ☐ insert in such a way that the interrupted spacing of the teeth matches the gearshift shaft ⇒ [page 55](#)
- ☐ may be replaced with the gearshift mechanism mounted
- ☐ Fitting position ⇒ [page 55](#)



- ☐ as of 06.06 the diameter of the fixing bolt is smaller ⇒ [page 55](#)

9 - Cap

- ☐ for gearbox bleeder

10 - Lock washer

- ☐ always replace ⇒ Electronic Catalogue of Original Parts
- ☐ is not required, if the relay lever is made of plastic

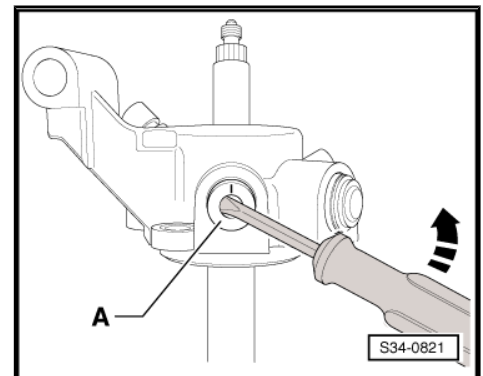
11 - Screw cap

12 - Spring

- ☐ not installed on all gearboxes
- ☐ if present, reinstall

Remove locking bolt -A- from gearshift cover

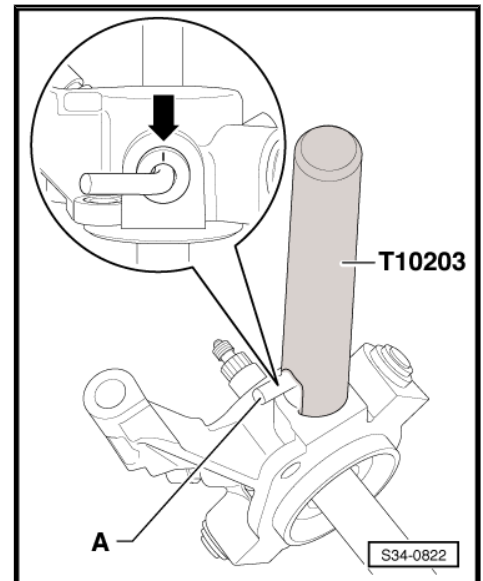
- Remove the outer part of the locking bolt.
- Then lever out locking bolt carefully with a screwdriver.



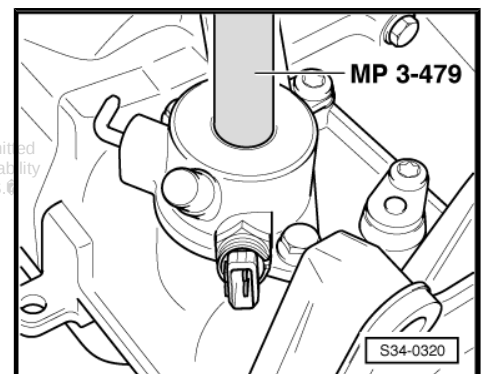
Press locking bolt -A- into gearshift cover

Fitting position:

The marking -arrow- points to the upper part of the gearshift shaft.



Press in the gasket up to the stop.



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7 Disassembling and assembling the gearshift forks

Special tools and workshop equipment required

- ◆ Pressure plate -MP3-407 (VW 402)-
- ◆ Thrust piece - T30100/1-
- ◆ Assembly device -MP5-402 (3301)-
- ◆ Thrust piece -MP3-453 (VW 431) -
- ◆ Spacer sleeve -MP3-458 (VW 472)-
- ◆ Driver -MP1-304 (10-206)-
- ◆ Removal tool for inner lining of the door panel -MP8-602/1-



Note

The gearshift fork group (Pos. 7) does not have to be disassembled for the disassembly and assembly of the shift segments, clamping plates and angular ball bearings.

1 - 5th gear shift segment

- ☐ Identification
⇒ [page 115](#)
- ☐ It must still be possible to rotate the segment freely once the circlip has been fitted

2 - Circlip

- ☐ always replace ⇒ Electronic Catalogue of Original Parts
- ☐ removing ⇒ [page 115](#)
- ☐ installing ⇒ [page 115](#)

3 - 5th gear shift fork

- ☐ Setting 5th gear
⇒ [page 102](#)

4 - 25 Nm

5 - 5th gear shift fork

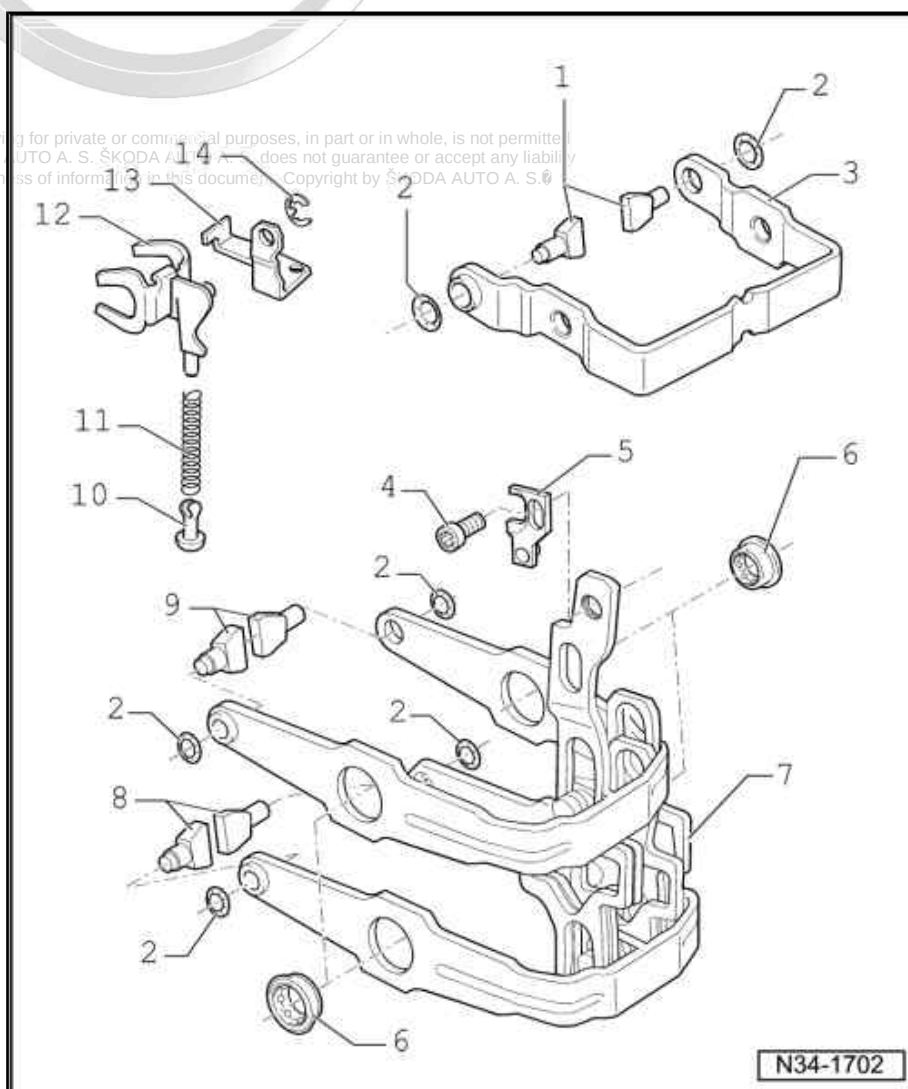
6 - Angular ball bearing

- ☐ 4 pieces
- ☐ removing ⇒ [page 116](#)
- ☐ installing ⇒ [page 116](#)

7 - Gearshift fork group with shift rails

8 - 1st/2nd gear shift segment

- ☐ Identification
⇒ [page 115](#)
- ☐ It must still be possible to rotate the segment freely once the circlip has been fitted





9 - 3rd/4th gear shift segment

- ☐ Identification ⇒ [page 115](#)
- ☐ It must still be possible to rotate the segment freely once the circlip has been fitted

10 - Sliding shoe

11 - Spring

12 - Gearshift fork reverse gear

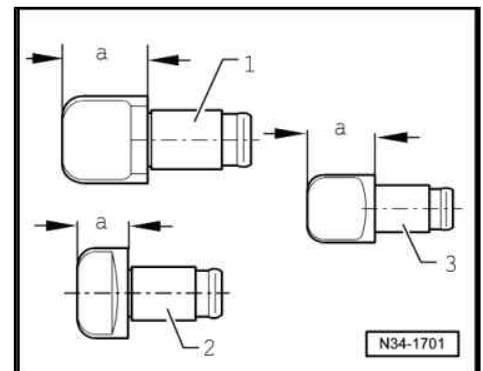
13 - Support for reverse gear shift fork

14 - Circlip

Identification of shift segments

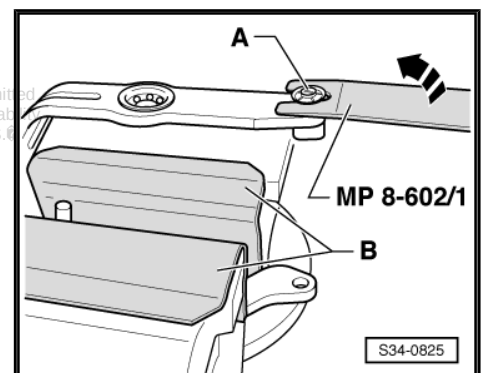
Dimension -a-

- 1 - Shift segments 1st and 2nd gear = 11.4 mm
- 2 - Shift segments 3rd and 4th gear = 7.7 mm
- 3 - Shift segments 5th gear = 12.1 mm



Removing the circlip

- Secure the shift fork in a vice fitted with protective jaws -B-.
- Lift off the circlip -A- in the direction of the arrow.



Fitting the circlip

- Press the circlip with a handle wrench into the slot of the shift segment.

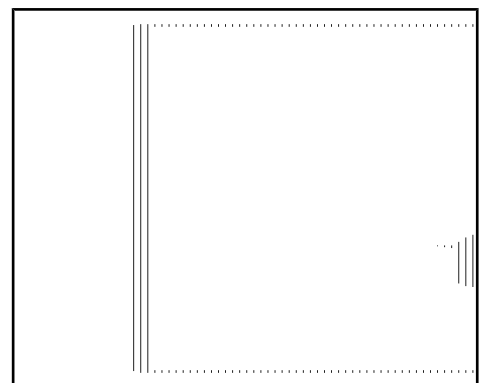


Note

It must still be possible to rotate the shift segment freely once the circlip has been fitted.

A - Handle wrench, wrench size 10

B - Protective jaws





Pressing off angular ball bearing



Note

Do not bend the shift forks when removing and installing the angular ball bearings.

Insert the angular ball bearing up to the stop into the gearshift fork

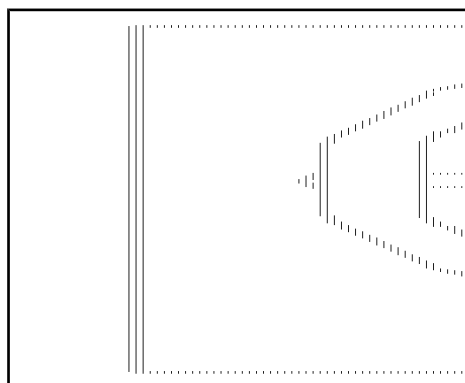
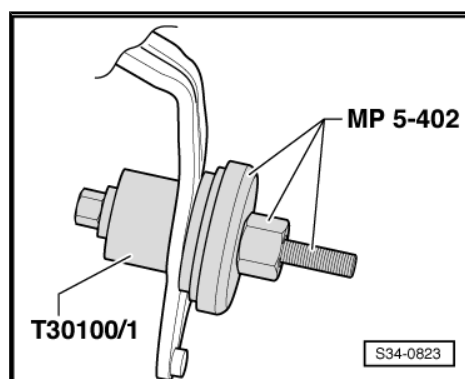
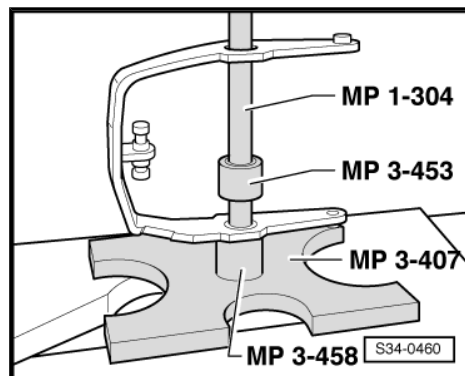
The recess in the pressure plate -T30100/1- points towards the ball bearing.

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Shift fork with fitted shift segments

	Dimension -a- (mm)
1st/2nd gear shift fork	87,2 ... 87,4
3rd/4th gear shift fork	93,6 ... 93,8

Shift segment assignment ⇒ [page 115](#)



35 – Wheels, shafts

1 Drive shaft

1.1 Disassembling and assembling the drive shaft

Special tools and workshop equipment required

- ◆ Pressure spindle -MP3-423 (VW 407)-
- ◆ Pressure washer -MP3-455 (VW 447 H)-
- ◆ Pressure spindle -MP3-408 (VW 412)-
- ◆ Pipe section -MP3-451 (VW 422)-
- ◆ Pressure plate -MP3-406 (VW 401)-
- ◆ Pressure plate -MP3-407 (VW 402)-
- ◆ Pressure spindle -MP3-448 (VW 408 A)-
- ◆ Pipe section -MP3-4013 (VW 421)-
- ◆ Thrust piece -MP3-411 (VW 454) -
- ◆ Pressure washer -MP3-413 (VW 510) -
- ◆ Pressure washer -MP3-456 (VW 447 I)-
- ◆ Knock-in bushing -T30034(41-501)-
- ◆ Separating device -Kukko 17/1-



Note

- ◆ *Removing and installing drive shaft* ⇒ [page 94](#) .
- ◆ *When installing new pinions or a new drive shaft observe the technical data* ⇒ [page 1](#) *and instructions in the* ⇒ *Electronic Catalogue of Original Parts* .
- ◆ *If the position of the tapered-roller bearing is influenced when parts are replaced the drive shaft must be reset* ⇒ [page 123](#) . *Setting overview* ⇒ [page 159](#) .

1 - Clutch housing

2 - Outer ring/tapered-roller bearing

- ☐ pressing out
⇒ [page 119](#)
- ☐ installing ⇒ [page 119](#)

3 - Inner ring/tapered-roller bearing

- ☐ pressing off
⇒ [page 120](#)
- ☐ pressing on
⇒ [page 120](#)

4 - Drive shaft

- ☐ adjust ⇒ [page 123](#)

5 - 3rd gear pinion

- ☐ Fitting position: Collar points to the 4th gear sliding gear
- ☐ pressing off
⇒ [page 120](#)
- ☐ pressing on
⇒ [page 121](#)

6 - Circlip

- ☐ always replace ⇒ Electronic Catalogue of Original Parts

7 - 4th gear pinion

- ☐ pressing off with outer ring/tapered-roller bearing and bushing
⇒ [page 120](#)
- ☐ pressing on
⇒ [page 121](#)
- ☐ Collar points to the 3rd gear sliding gear

8 - Inner ring/tapered-roller bearing

- ☐ press out with 4th gear pinion and bushing ⇒ [page 120](#)
- ☐ pressing on ⇒ [page 121](#)

9 - Thrust washer

10 - Outer ring/tapered-roller bearing

- ☐ pressing out ⇒ [page 122](#)
- ☐ installing ⇒ [page 122](#)

11 - Adjusting washer

- ☐ Determine thickness ⇒ [page 123](#)

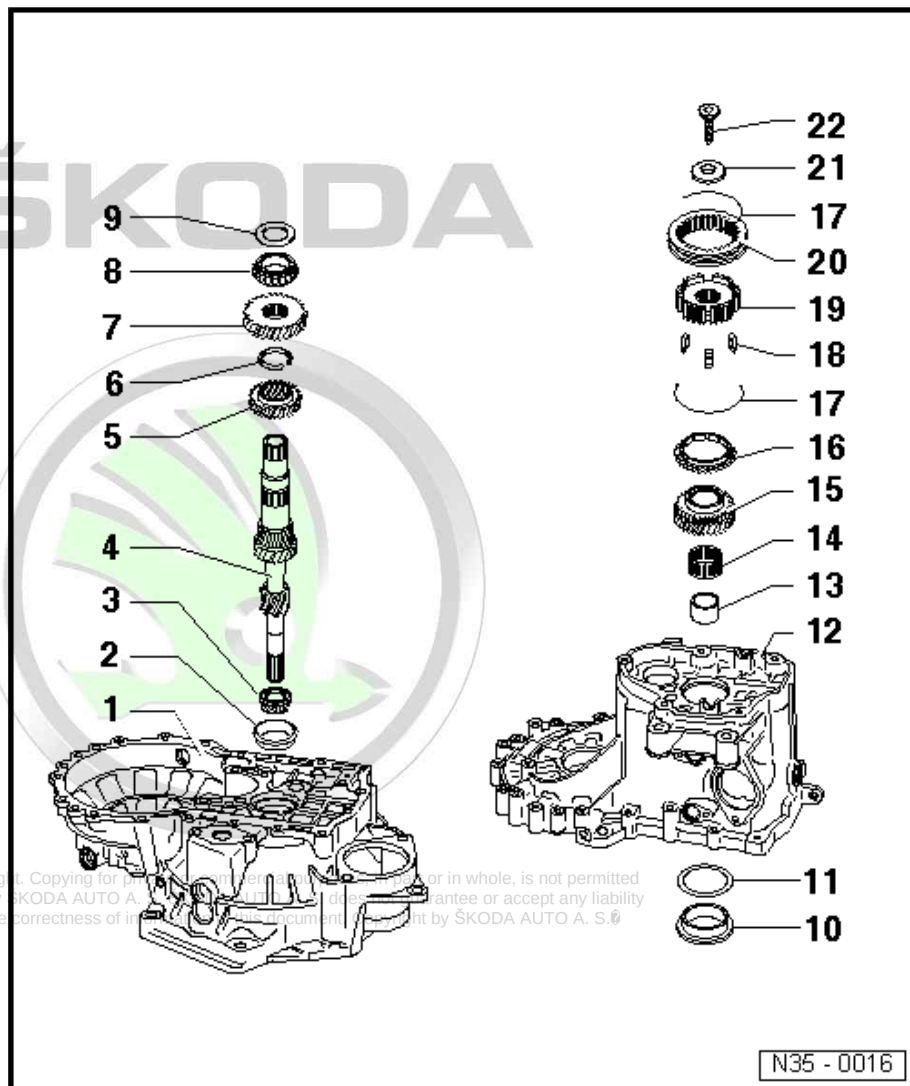
12 - Gearbox housing

13 - Bushing

- ☐ for 5th gear needle bearing
- ☐ press out with 4th gear pinion and inner ring/tapered-roller bearing ⇒ [page 120](#)
- ☐ installing ⇒ [page 121](#)
- ☐ insert thrust washer Pos. 9 before assembly

14 - Needle bearing

- ☐ for 5th gear



15 - 5th gear sliding gear

- ☐ remove together with 5th gear synchronizer body

16 - 5th gear synchronizer ring

- ☐ with integrated arresters ⇒ [page 86](#)
- ☐ check for wear ⇒ [page 99](#)

17 - Spring

- ☐ Fitting position ⇒ [page 123](#) and ⇒ [page 123](#)

18 - Arresters

- ☐ (3 pieces)
- ☐ Fitting position ⇒ [page 122](#)

19 - 5th gear synchronizer body

- ☐ remove separately ⇒ [page 89](#)
- ☐ remove together with gearbox housing ⇒ [page 94](#)
- ☐ installing ⇒ [page 102](#)

20 - 5th gear sliding sleeve

- ☐ remove together with 5th gear synchronizer body Pos. 19

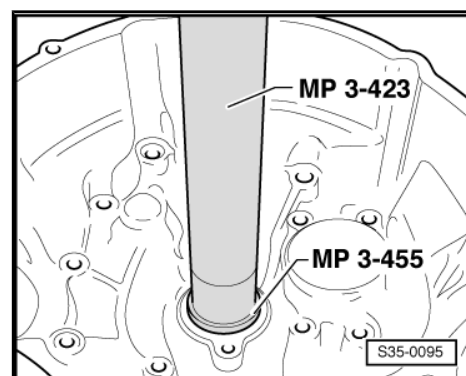
21 - Disc spring

- ☐ Fitting position ⇒ [page 86](#)

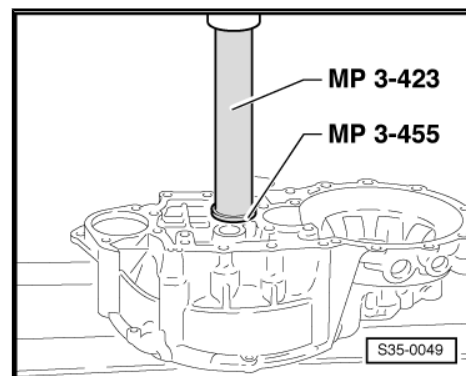
22 - Screw with internal serrations ⇒ [page 86](#)

- ☐ always replace ⇒ Electronic Catalogue of Original Parts
- ☐ holds the disc spring in position ⇒ [page 86](#)

Pressing out outer ring/tapered-roller bearing

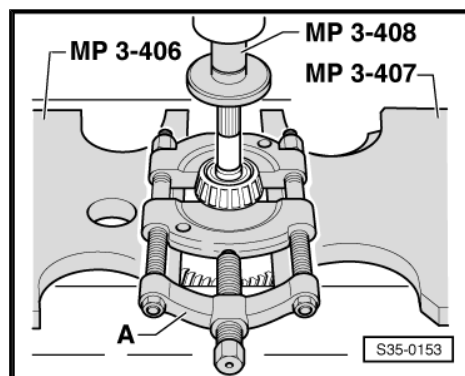


Pressing on outer ring/tapered-roller bearing

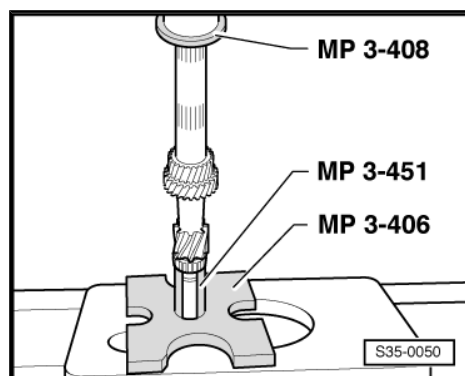


Pressing off inner ring/tapered-roller bearing

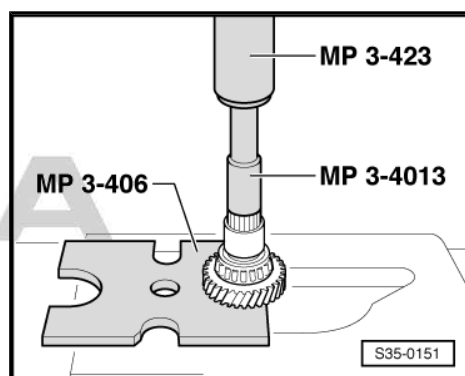
A - Separating device - Kukko 17/1-



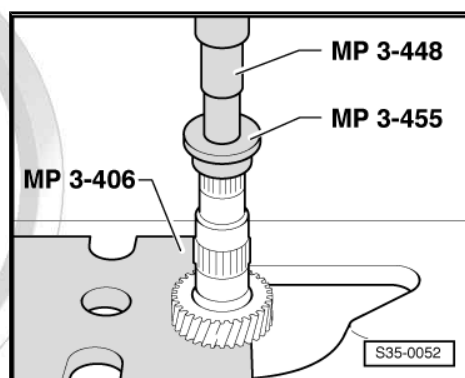
Press on inner ring/tapered-roller bearing



Pressing off 4th gearwheel with tapered-roller bearing and bushing

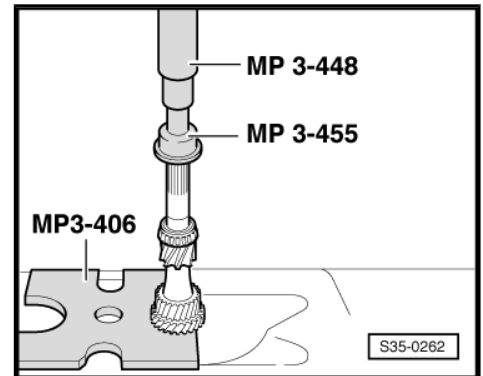


Pressing off 3rd gear pinion

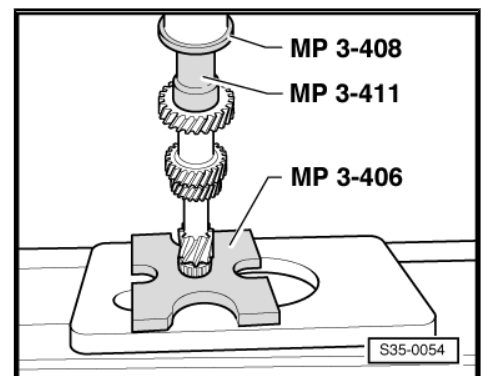




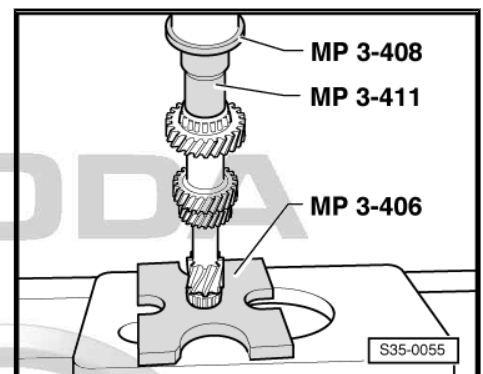
Pressing on 3rd gear pinion



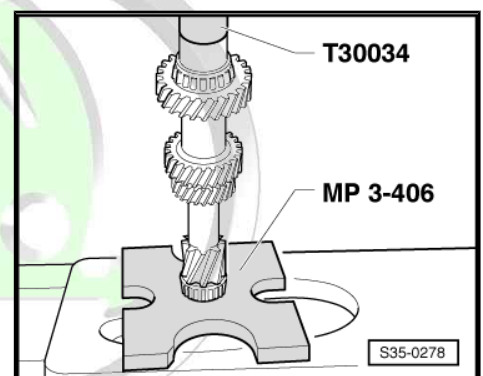
Pressing on 4th gear pinion Collar points to the 3rd gear.



Press on inner ring/tapered-roller bearing

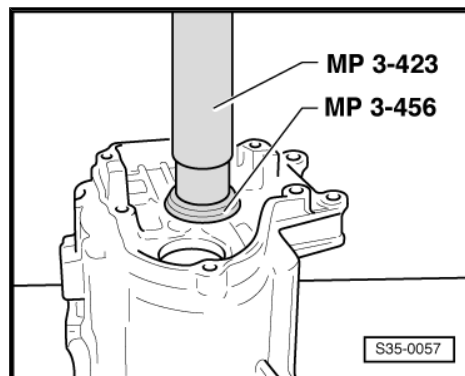


Pressing on bushing for needle bearing



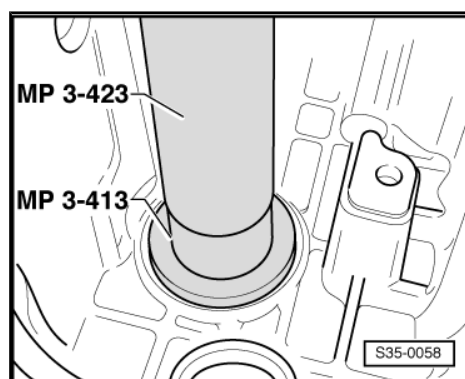
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Pressing out outer ring/tapered-roller bearing



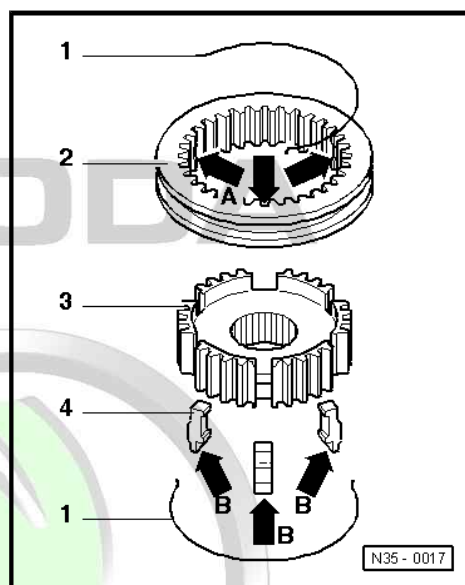
Pressing on outer ring/tapered-roller bearing

- After setting the drive shaft insert with adjusting washer.



5th gear synchronization

- 1 - Springs for arresters
- 2 - Sliding sleeve with 3 recesses -arrows A- for the arresters -4-
- 3 - Synchronizer body
- 4 - Arresters (Fitting location: Leg -arrow B- points to the sharp teeth of the sliding sleeve -2-)



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Assemble sliding sleeve/5th gear synchronizer body

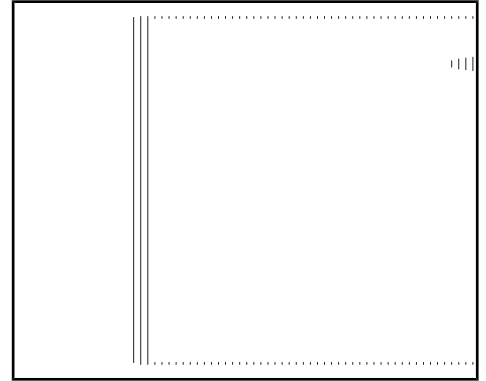
- Slide the sliding sleeve over the synchronizer body.

The sharp teeth -A- and the collar -B- of the synchronizer body point in the same direction.

The recesses for the arresters in the sliding sleeve and the synchronizer body must be positioned above one another

⇒ [page 122](#)

- Insert arresters (Fitting location: ⇒ [page 122](#)).
- Mount the springs with 120° offset under the shoulder -C-. The angled ends of the spring must be located before the arresters -arrows-.



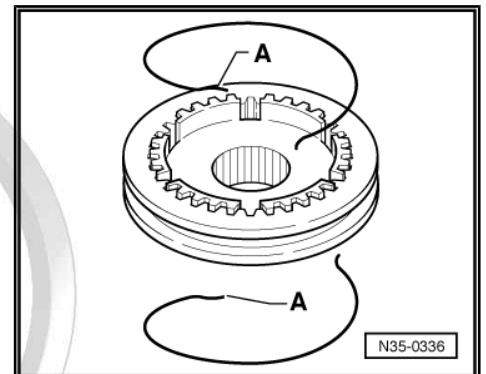
Note

Observe the correct fitting position of springs on the arresters which are hollow inside ⇒ [page 123](#) .

Springs bent at right angles -A- for the 5th gear synchronisation

These springs are installed on both sides.

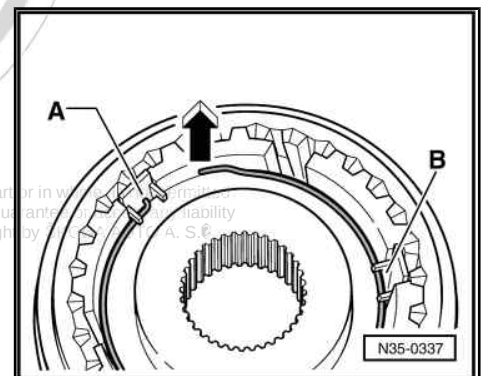
- The springs can only be installed on previous gearboxes together with arresters, which are hollow inside.
- Insert arresters (Fitting location ⇒ [page 122](#)).



Fitting location of the springs:

- Mount the springs with 120° offset.
- The angled end -A- of the spring must grip into the hollow arrester and at the same time be located below the shoulder -B- of the arresters.

The end bent at right angles always points away from the synchronizer body -direction of arrow-.



1.2 Setting drive shaft

(Determine adjusting washer for drive shaft)

Special tools and workshop equipment required

- ◆ Gauge block plate -MP3-405/17-
- ◆ Pressure washer -MP3-413 (VW 510) -
- ◆ Pressure spindle -MP3-423 (VW 407)-
- ◆ Universal dial gauge holder -MP3-447 (VW 387)-
- ◆ Pressure washer -MP3-455 (VW 447 H)-
- ◆ Pressure washer -MP3-456 (VW 447 I)-
- ◆ Gearbox mount -T30109 (VW 353)-



◆ Dial gauge

The drive shaft must be re-set when the following components are replaced:

- ◆ Gearbox housing
- ◆ Clutch housing
- ◆ Drive shaft
- ◆ 4th gear pinion

or

- ◆ Tapered-roller bearing

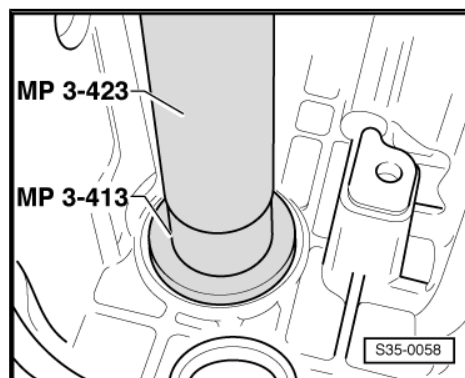
Setting overview ⇒ [page 159](#)



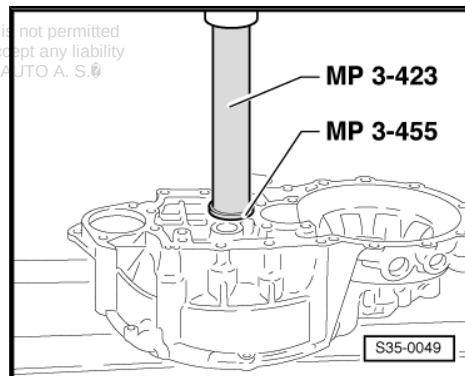
Note

Sealing surfaces of clutch and gearbox housing must be removed of sealant residues.

- Press the outer ring/tapered-roller without adjusting washer up to the stop into the gearbox housing.



- Press the outer ring/tapered-roller bearing up to the stop into the clutch housing.
- Insert drive shaft in the clutch housing and install gearbox housing. Tighten screws to tightening torque ⇒ [page 87](#).

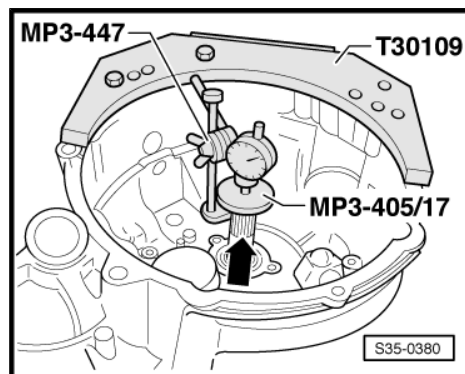


- Fit measuring device and dial gauge in the clutch housing.
- Turn the drive shaft several times before measuring to ensure the tapered-roller bearings set. Set the dial gauge to "0" with 1 mm bias.



Note

This procedure must be repeated before each subsequent measurement, because otherwise the dial gauge does not return to its initial setting to "0".



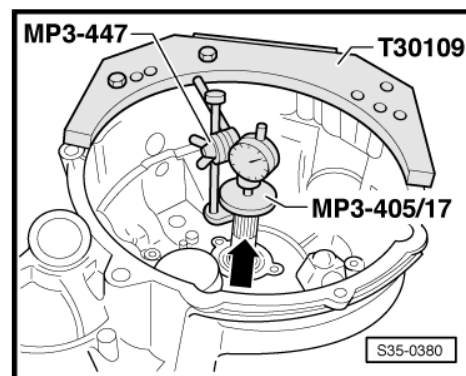


- Press drive shaft towards dial gauge
-in the direction of the arrow-.
- Read off play on dial gauge and note (in the example = 1.21 mm).



Note

The dial gauge does not return to its initial position.



1.2.1 Determine thickness of the adjusting washer

Example:

Measured value of bearing play	Thickness of the adjusting washer according to the table
1.21 mm	1.175 mm

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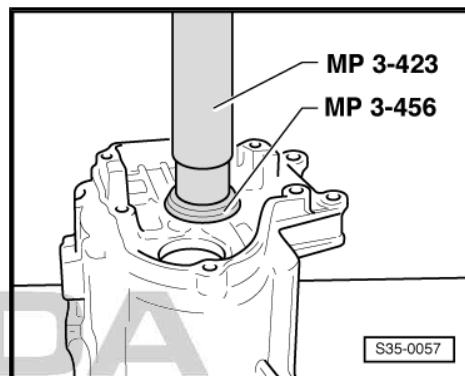


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- Remove drive shaft and press out outer ring/tapered-roller bearing from the gearbox housing with thrust washer - MP3-456 (VW 447 I)- .
- Determine the adjusting washer thickness from the table
⇒ [page 126](#) (example 1.175 mm).

Adjusting washer table

Bearing clearance	Adjusting washer
Measured value (mm)	Thickness (mm)
0,671 ...0,699	0,650
0,700 ...0,724	0,675
0,725 ...0,749	0,700
0,750 ...0,774	0,725
0,775 ...0,799	0,750
0,800 ...0,824	0,775
0,825 ...0,849	0,800
0,850 ...0,874	0,825
0,875 ...0,899	0,850
0,900 ...0,924	0,875
0,925 ...0,949	0,900
0,950 ...0,974	0,925
0,975 ...0,999	0,950
1,000 ...1,024	0,975
1,025 ...1,049	1,000
1,050 ...1,074	1,025
1,075 ...1,099	1,050
1,100 ...1,124	1,075
1,125 ...1,149	1,100
1,150 ...1,174	1,125
1,175 ...1,199	1,150
1,200 ...1,224	1,175
1,225 ...1,249	1,200
1,250 ...1,274	1,225
1,275 ...1,299	1,250
1,300 ...1,324	1,275
1,325 ...1,349	1,300
1,350 ...1,374	1,325
1,375 ...1,399	1,350
1,400 ...1,424	1,375
1,425 ...1,449	1,400
1,450 ...1,474	1,425
1,475 ...1,499	1,450
1,500 ...1,524	1,475
1,525 ...1,549	1,500
1,550 ...1,574	1,525
1,575 ...1,599	1,550
1,600 ...1,624	1,575
1,625 ...1,649	1,600
1,650 ...1,674	1,625
1,675 ...1,699	1,650
1,700 ...1,724	1,675



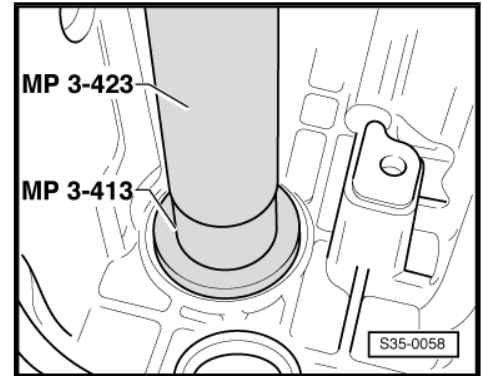
Note

Assign the adjusting washers via the ⇒ *Electronic Catalogue of Original Parts* .



- Press outer ring/tapered-roller bearing with thrust washer - MP3-413 (VW 510)- into the gearbox housing together with the adjusting washer (in the example 1.175 mm).
- Position the gearbox housing and tighten screws to the given tightening torque ⇒ [page 87](#) .

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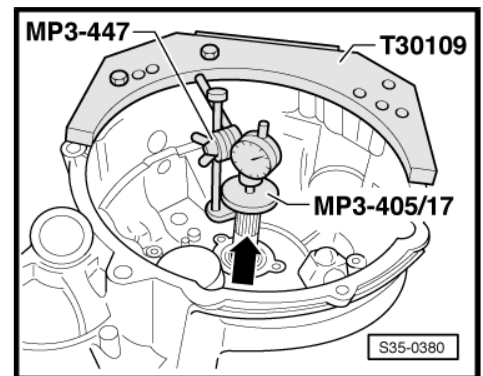
1.2.2 Control measurement

- Insert measuring device and dial gauge.
- Turn the drive shaft several times to ensure the tapered-roller bearings set.
- Press drive shaft in the -direction of the arrow-.
- The bearing clearance must be min. 0.01...max. 0.09 mm.



Note

If no bearing clearance can be measured, however the drive shaft has a tangible valve rock and can easily be turned, then the setting is also OK.



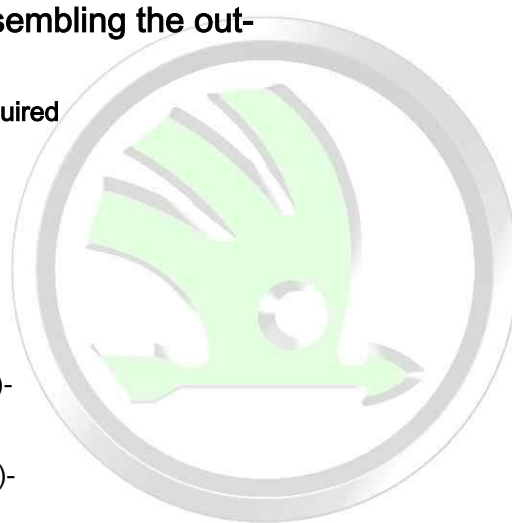
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2 Output shaft

2.1 Disassembling and assembling the output shaft

Special tools and workshop equipment required

- ◆ Drive bushing -MP1-316 (30-100)-
- ◆ Pressure plate -MP3-407 (VW 402)-
- ◆ Pressure spindle -MP3-408 (VW 412)-
- ◆ Thrust piece -MP3-411 (VW 454) -
- ◆ Pressure spindle -MP3-423 (VW 407)-
- ◆ Pressure spindle -MP3-448 (VW 408 A)-
- ◆ Pressure spindle -MP3-449 (VW 409)-
- ◆ Pressure washer -MP3-455 (VW 447 H)-
- ◆ Alignment rails -MP3-457 (VW 457) -
- ◆ Pressure washer -MP3-460 (VW 512)-
- ◆ Pipe section -MP3-461 (VW 519)-
- ◆ Insertion tool -MP3-466 (32-111)-
- ◆ Insertion tube -MP3-485 (32-109) -
- ◆ Knock-in bushing -T30034 (41-501)-
- ◆ Pipe section -T30041 (2040)-
- ◆ Tapered-roller bearing extractor -V.A.G 1582-
- ◆ Gripper -V.A.G 1582/4-
- ◆ Gripper -V.A.G 1582/5-
- ◆ Interior extractor 37 up to 46 mm , e.g. -Kukko21/6-
- ◆ Countersupport e.g. -Kukko 22/2-
- ◆ Separating device 12...115 mm , e.g. -Kukko17/2-
- ◆ Feeler gauge



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Note

- ◆ *Removing and installing output shaft ⇒ [page 94](#) .*
- ◆ *When installing new pinions or a new output shaft observe the technical data ⇒ [page 1](#) and instructions in the ⇒ *Electronic Catalogue of Original Parts* .*
- ◆ *Replace both tapered-roller bearings together.*

The output shaft can be disassembled as follows:

- Insert separating device under 2nd gear sliding gear
⇒ [Item 21 \(page 130\)](#) and press off as shown in
⇒ [page 132](#) .
- Remove circlip ⇒ [Item 17 \(page 130\)](#) .
- Press off sliding sleeve with 1st and 2nd gear synchronizer body as described in ⇒ [page 132](#) .

1 - 25 Nm and torque a further 90°

- ☐ 4 nuts for bearing support Pos. 9
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

2 - Clutch housing

3 - Adjusting washer

- ☐ for output shaft
- ☐ Determine thickness ⇒ [page 138](#)

4 - Outer ring/tapered-roller bearing small

- ☐ removing ⇒ [page 131](#)
- ☐ installing ⇒ [page 131](#)

5 - Inner ring/tapered-roller bearing small

- ☐ remove ⇒ [page 132](#)
- ☐ pressing on ⇒ [page 132](#)

6 - Output shaft

- ☐ adjust ⇒ [page 138](#)

7 - Inner ring/tapered-roller bearing large

- ☐ remove ⇒ [page 133](#)
- ☐ pressing on ⇒ [page 133](#)

8 - O-ring

- ☐ Position O-rings (4 pieces) on the bearing support screws
- ☐ always replace ⇒ Electronic Catalogue of Original Parts

9 - Bearing support

- ☐ with outer ring/tapered-roller bearing large and screws
- ☐ Always replace outer ring together with tapered-roller bearing large and bearing support

10 - Thrust washer

- ☐ Heel of thrust washer points to tapered-roller bearing

11 - 1st gear sliding gear

12 - Needle bearing

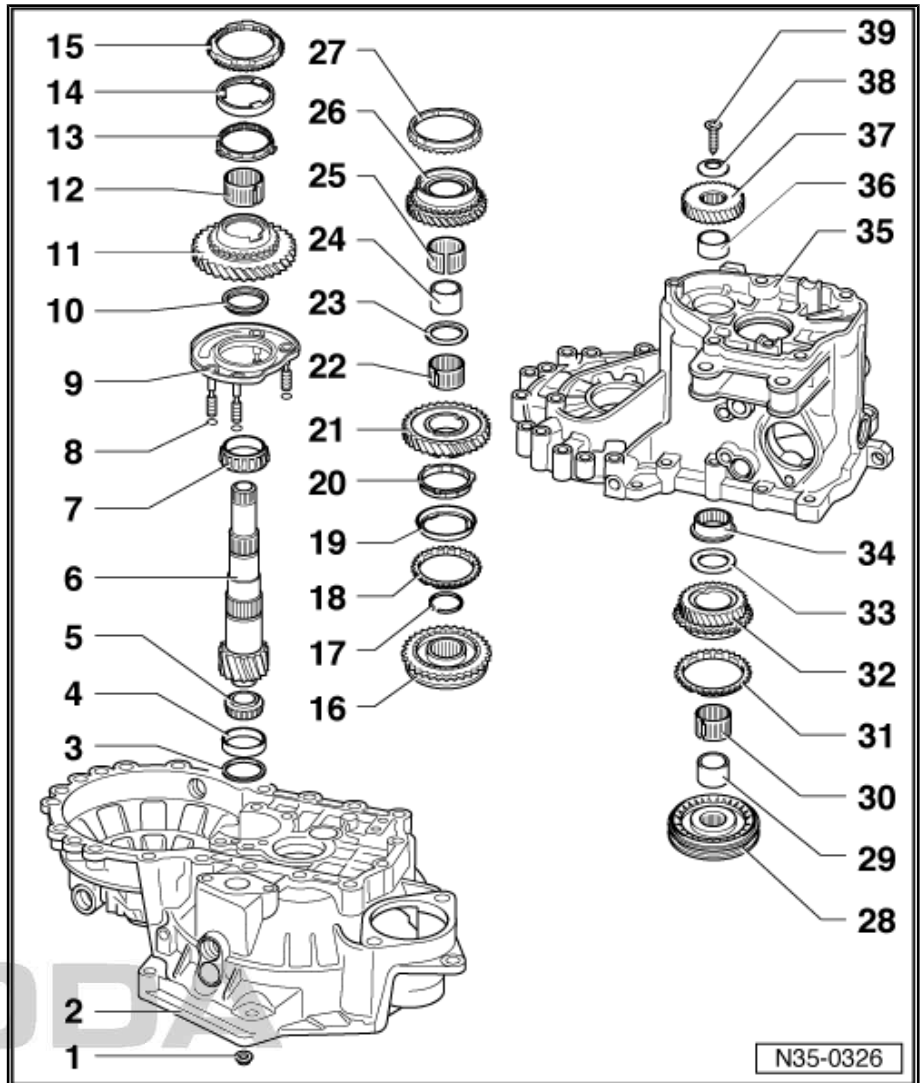
- ☐ for 1st gear

13 - Synchronizer ring

- ☐ (Inner ring for 1st gear)
- ☐ Fitting position ⇒ [page 133](#)
- ☐ check for wear ⇒ [page 133](#)
- ☐ Check pegs for traces of wear

14 - Outer ring for 1st gear

- ☐ Fitting position ⇒ [page 133](#)
- ☐ check for wear ⇒ [page 134](#)
- ☐ replace if there are any traces of scoring or friction



15 - 1st gear synchronizer ring

- ☐ Fitting position ⇒ [page 133](#)
- ☐ check for wear ⇒ [page 134](#)

16 - Sliding sleeve with 1st and 2nd gear synchronizer body

- ☐ after removing the circlip (Pos. 17) press off with bearing support ⇒ [page 132](#)
- ☐ disassembling ⇒ [page 134](#)
- ☐ Assembling sliding sleeve/synchronizer body ⇒ [page 134](#) , ⇒ [page 134](#) and ⇒ [page 135](#)
- ☐ Fitting position ⇒ [page 135](#)
- ☐ pressing on ⇒ [page 135](#)

17 - Circlip

18 - 2nd gear synchronizer ring

- ☐ check for wear ⇒ [page 134](#)
- ☐ insert in such a way that the recesses lock into the arresters of the sliding sleeve Pos. 16

19 - Outer ring for 2nd gear

- ☐ insert into synchronizer ring Pos. 18
- ☐ Fitting position ⇒ [page 135](#)
- ☐ replace if there are any traces of scoring or of friction ⇒ Electronic Catalogue of Original Parts

20 - Synchronizer ring

- ☐ (Inner ring for 2nd gear)
- ☐ check for wear ⇒ [page 134](#)
- ☐ Check pegs for traces of wear
- ☐ Fitting position ⇒ [page 136](#)

21 - 2nd gear sliding gear

- ☐ Fitting position ⇒ [page 136](#)

22 - Needle bearing

- ☐ for 2nd gear

23 - Thrust washer

24 - Bushing for 3rd gear needle bearing

- ☐ press off with 2nd gear sliding gear ⇒ [page 132](#)
- ☐ pressing on ⇒ [page 136](#)

25 - Needle bearing

- ☐ for 3rd gear

26 - 3rd gear sliding gear

27 - 3rd gear synchronizer ring

- ☐ check for wear ⇒ [page 136](#)

28 - Sliding sleeve with 3rd and 4th gear synchronizer body

- ☐ press off ⇒ [page 132](#) together with 2nd gear Pos. 21 and 3rd gear Pos. 26 sliding gear
- ☐ disassembling ⇒ [page 137](#)
- ☐ Assembling sliding sleeve/synchronizer body ⇒ [page 137](#) , ⇒ [page 137](#) and ⇒ [page 137](#)
- ☐ Fitting position of the sliding sleeve with synchronizer body ⇒ [page 137](#)
- ☐ pressing on ⇒ [page 138](#)

29 - Bushing

- ☐ for 4th gear needle bearing
- ☐ press off with sliding sleeve and 3rd and 4th gear synchronizer body Pos. 28 ⇒ [page 132](#)
- ☐ pressing on ⇒ [page 138](#)



30 - Needle bearing

- ☐ for 4th gear

31 - 4th gear synchronizer ring

- ☐ check for wear ⇒ [page 136](#)

32 - 4th gear sliding gear

33 - Thrust washer

34 - Needle bearing

- ☐ for output shaft
- ☐ removing and installing ⇒ [page 106](#)

35 - Gearbox housing

36 - Bushing

- ☐ for needle bearing of output shaft Pos. 34
- ☐ pressing off ⇒ [page 132](#)
- ☐ pressing on ⇒ [page 138](#)

37 - 5th gear pinion

- ☐ remove separately ⇒ [page 89](#)
- ☐ remove together with gearbox housing ⇒ [page 94](#)
- ☐ installing ⇒ [page 102](#)

38 - Disc spring

- ☐ Fitting position ⇒ [page 94](#)

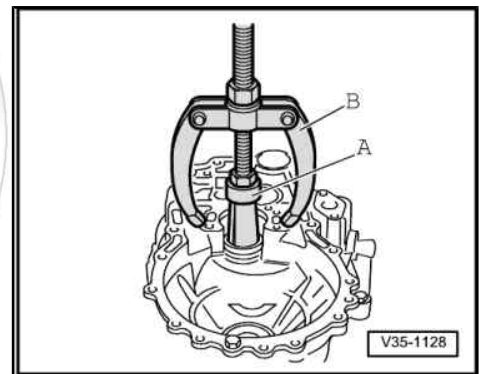
39 - Screw with internal serrations ⇒ [page 86](#)

- ☐ always replace ⇒ Electronic Catalogue of Original Parts
- ☐ holds the disc spring in position ⇒ [page 86](#)

Removing outer ring/tapered-roller bearing small

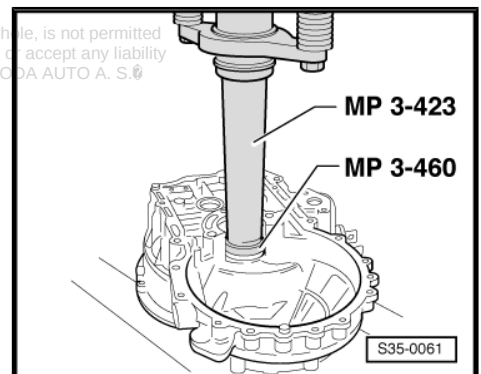
A - Interior extractor 37 ...46 mm , e.g. -Kukko 21/6-

B - Countersupport , e.g. -Kukko 22/2-



Pressing in small outer ring/tapered-roller bearing

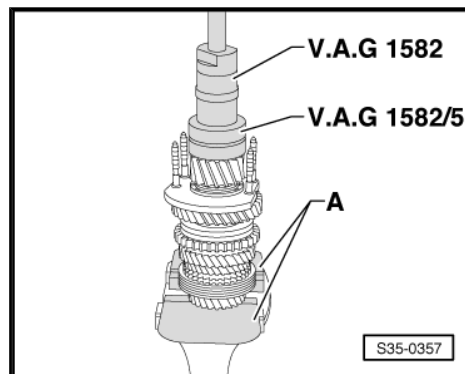
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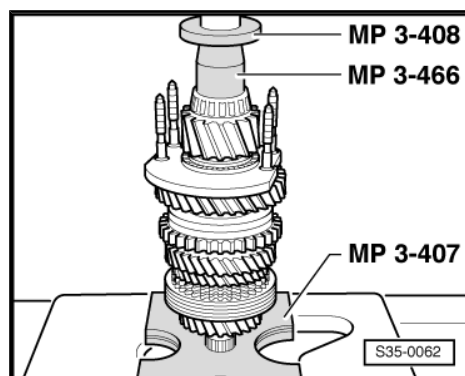
Extracting small inner ring/tapered-roller bearing

A - Protective jaws/vice

- Insert the gripper and tighten behind the rollers of the bearing, then turn bearing and tighten the gripper.



Press on small inner ring/tapered-roller bearing

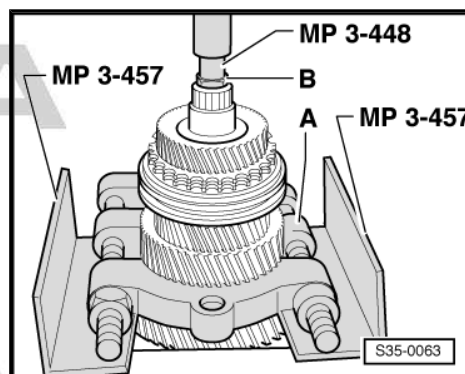


Pressing out 3rd and 4th gear synchronizer body/sliding sleeve, 2nd, 3rd and 4th gear sliding gear with bushing for needle bearing output shaft

A - Separating device 22...115 mm, e.g. -Kukko 17/2-

B - Bolt M10 x 20

- Insert separating device under 2nd gear sliding gear and press off.

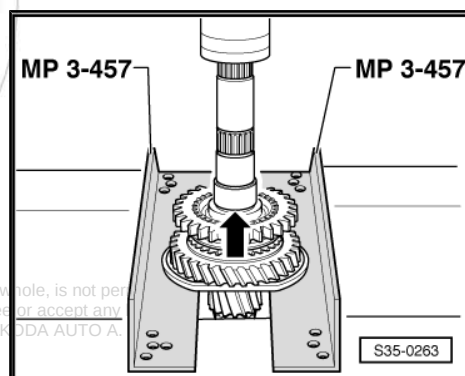


Note

Support the separating device in such a way that the 1st and 2nd gear sliding sleeve is not drawn off.

Press off sliding sleeve with synchronizer body and bearing support

- First remove the circlip -arrow-.



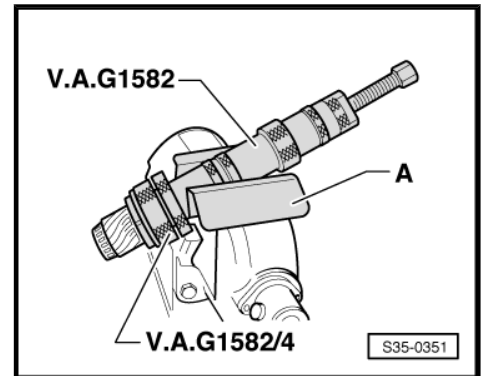
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Pulling off large inner ring/tapered-roller bearing

A - Protective jaws

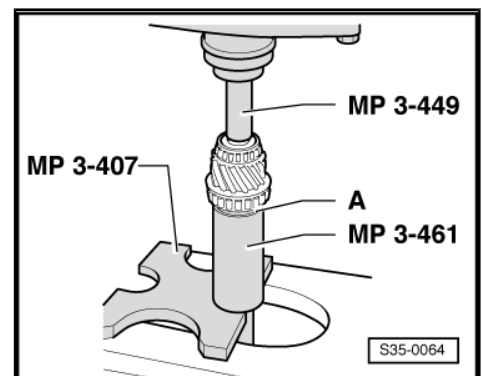
- Before fitting the extractor insert screw M10 x 20 in the output shaft bore.



Pressing on large inner ring/tapered-roller bearing

A - Thrust washer

- Insert thrust washer before pressing in the inner ring. The shoulder points to the inner ring.



Fitting position of the inner ring, outer ring and 1st gear synchronizer ring

- Position the inner ring -A- on the 1st gear sliding gear.

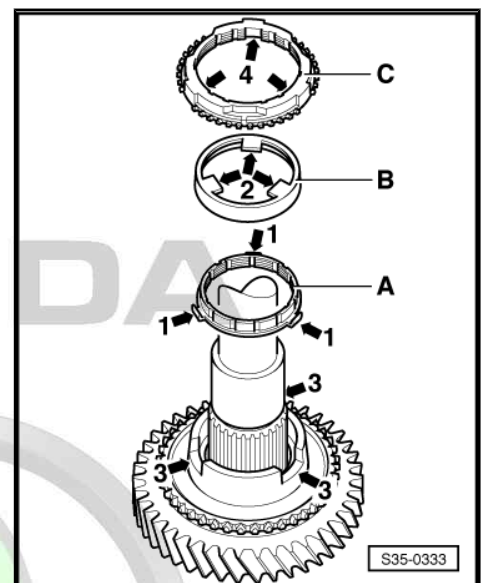
The angled lands -arrow 1- point towards the outer ring -B-.

- Position the outer ring -B-.

Lock the lands -arrows 2- in the recesses -arrows 3- of the sliding gear.

- Position the synchronizer ring -C-.

Lock the recesses -arrows 4- in the lands -arrows 1- of the inner ring -A-.



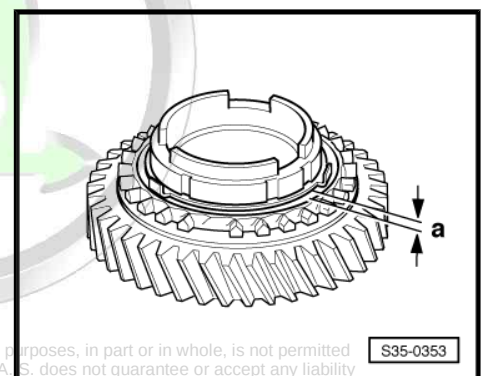
Note

If these components should not be replaced, make sure that they are assigned again to the original gear.

Check 1st and 2nd gear inner ring for wear

- Press the inner ring on the cone of the sliding gear and measure clearance "a" with a feeler gauge.

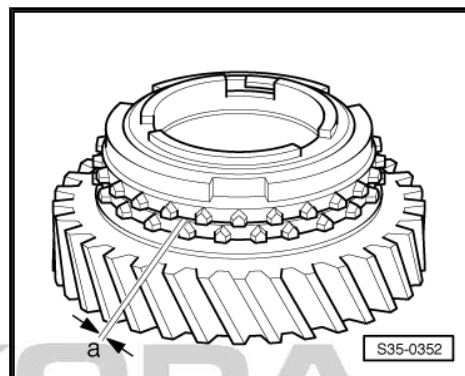
Clearance "a"	Fitting dimension	Wear limit
1st and 2nd gear	0.75...1.25 mm	0.3 mm



Check 1st and 2nd gear synchronizer ring for wear

- Press the synchronizer ring, outer ring and inner ring on the cone of the sliding gear and measure clearance -a- with a feeler gauge.

Clearance "a"	Fitting dimension	Wear limit
1st and 2nd gear	1.2...1.8 mm	0.5 mm



Disassembling and assembling the sliding sleeve/1st and 2nd gear synchronizer body

1 - Spring

Assign the springs via the ➔ Electronic Catalogue of Original Parts .

Installation together with arresters, which are hollow inside
➔ [page 134](#)

Installation together with arresters, which are not hollow inside
➔ [page 135](#)

2 - Sliding sleeve

3 - Synchronizer body

4 - Arresters

Assign the arresters via the ➔ Electronic Catalogue of Original Parts .

The collar on both sides of the synchronizer body is identical in width.

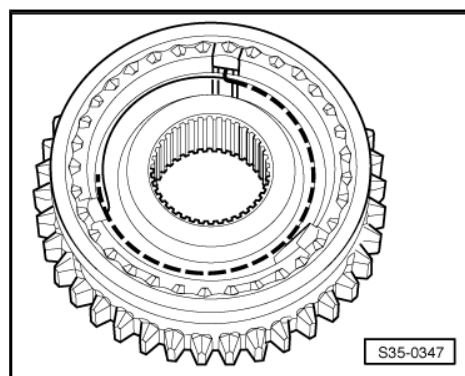
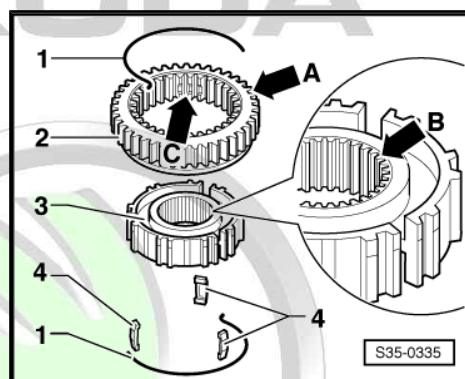
The collar has a chamfer on one side -arrow B-.

The chamfer on the collar of the synchronizer body and the outer serration of the sliding sleeve -arrow A- point after assembly in the same direction.

The recesses for the arresters on the synchronizer body and the sliding sleeve -arrow C- must be positioned above one another.

Assembly of sliding sleeve/1st and 2nd gear synchronizer body together with arresters, which are hollow inside

- The sliding sleeve is drawn over the synchronizer body.
- Insert arresters and mount springs with 120° offset. The angled end of the spring must grip into the hollow arrester.





Assembly of sliding sleeve/1st and 2nd gear synchronizer body together with arresters, which are not hollow inside

- The sliding sleeve is drawn over the synchronizer body.
- Insert arresters and mount springs with 120° offset. The angled ends of the spring must be located before the arresters -arrows-.

Fitting position of the 1st and 2nd gear sliding sleeve/synchronizer body

The teeth of the sliding sleeve -arrow- point towards the serration for the 3rd/4th gear synchronizer body -A-.

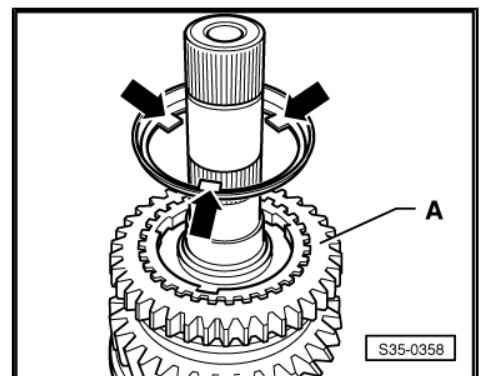
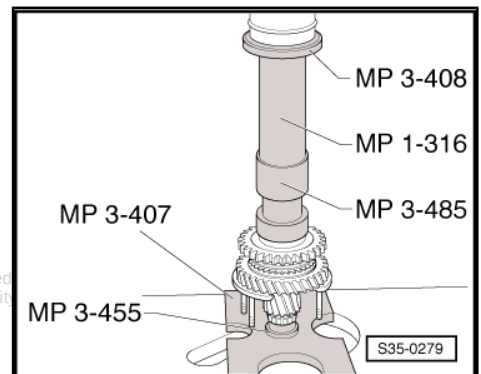
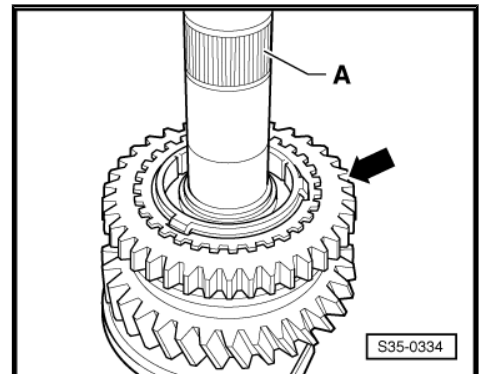
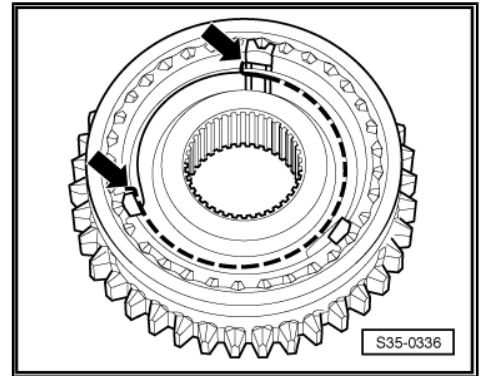
Press on the sliding sleeve/1st and 2nd gear synchronizer body

Rotate the synchronizer ring in such a way that the slots are flush with the arresters.

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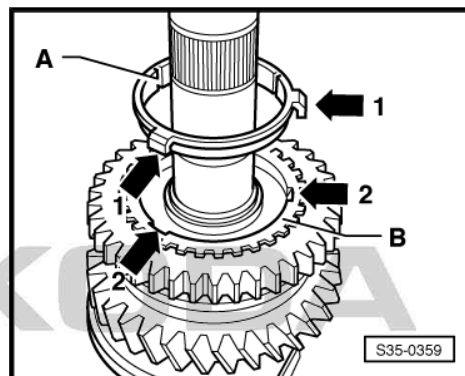
Fitting position of the 2nd gear outer ring

The pegs -arrows- point towards the 1st gear -A-.



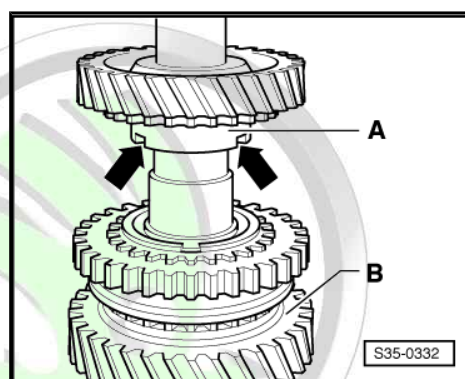
Fitting position for synchronizer ring (inner ring for 2nd gear) -A-

The pegs -arrow 1- lock into the recesses -arrow 2- of the synchronizer ring -B-.

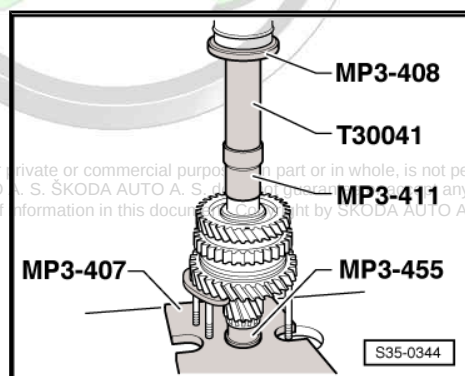


Fitting position 2nd gear sliding gear

The higher collar -A- points towards the 1st gear -B-. The recesses in the collar -arrows- lock into the pegs of the outer ring
⇒ [page 135](#) .



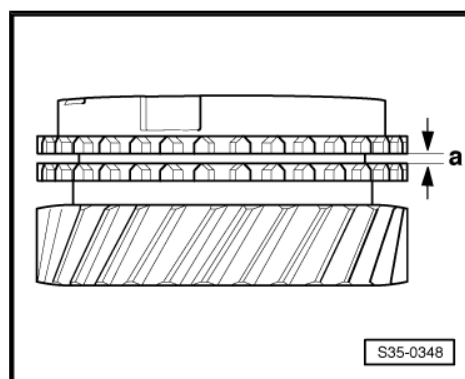
Pressing on bushing for 3rd gear needle bearing



Check 3rd and 4th gear synchronizer ring for wear

- Press the synchronizer ring on the cone of the sliding gear and measure clearance -a- with a feeler gauge.

Clearance "a"	Fitting dimension	Wear limit
3rd and 4th gear	1.0...1.7 mm	0.5 mm



Disassembling and assembling the sliding sleeve/3rd and 4th gear synchronizer body

1 - Spring

Assign the springs via the ➔ Electronic Catalogue of Original Parts .

Installation together with arresters, which are hollow inside
➔ [page 137](#) .

Installation together with arresters, which are not hollow inside
➔ [page 137](#) .

2 - Arresters

Assign the arresters via the ➔ Electronic Catalogue of Original Parts .

3 - Sliding sleeve

4 - Synchronizer body

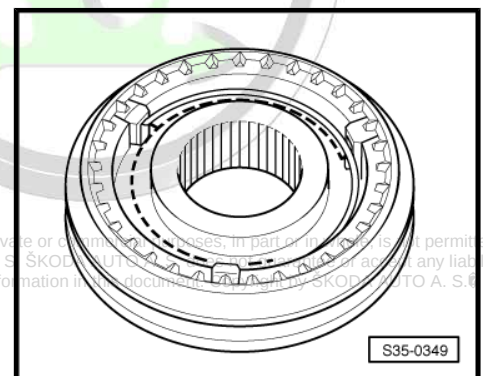
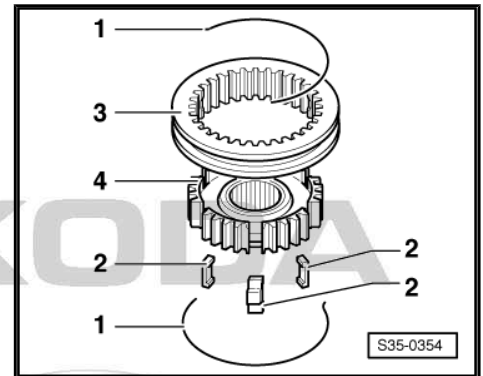
- Slide the sliding sleeve over the synchronizer body.

The recesses for the arresters on the synchronizer body and the sliding sleeve must be positioned above one another.

Assembly of sliding sleeve/3rd and 4th gear synchronizer body together with arresters, which are hollow inside

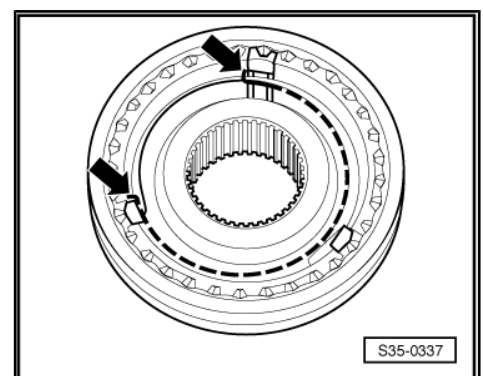
The sliding sleeve is drawn over the synchronizer body.

- Insert arresters and mount springs with 120° offset. The angled end of the spring must grip into the hollow arrester.



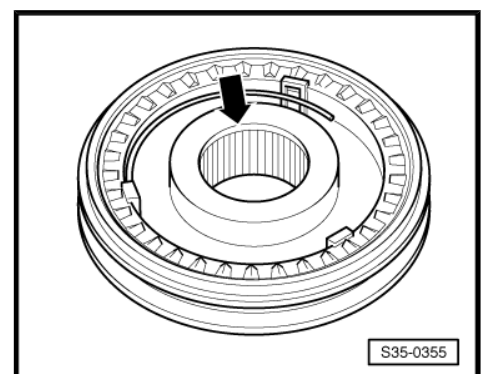
Assembly of sliding sleeve/3rd and 4th gear synchronizer body together with arresters, which are not hollow inside

- The sliding sleeve is drawn over the synchronizer body.
- Insert arresters and mount springs with 120° offset. The angled ends of the spring must be located before the arresters -arrows-.

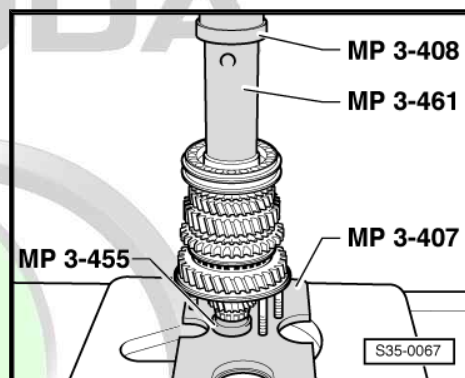


Fitting position of the sliding sleeve/3rd and 4th gear synchronizer body

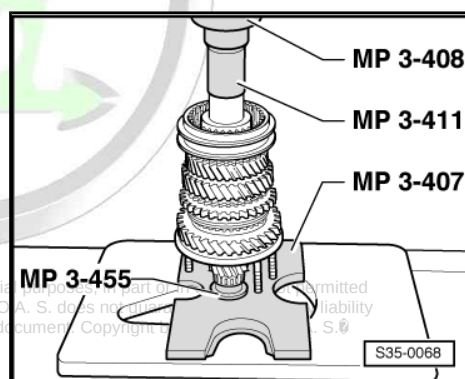
Chamfer -arrow- points towards the 4th gear.



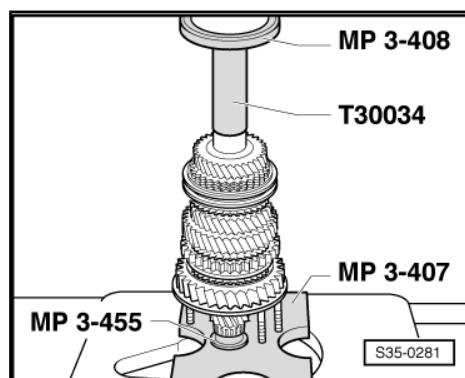
Press on the synchronizer body with the 3rd and 4th gear sliding sleeve



Pressing on bushing for 4th gear needle bearing



Pressing on bushing for needle bearing/output shaft



2.2 Setting output shaft

(Determine adjusting washer for output shaft)

Special tools and workshop equipment required

- ◆ Gauge block plate -MP3-405/17-
- ◆ Pressure spindle -MP3-423 (VW 407)-
- ◆ Universal dial gauge holder -MP3-447 (VW 387)-
- ◆ Pressure washer -MP3-460 (VW 512)-
- ◆ Bolts M8 and M10 -3114/2-
- ◆ Interior extractor 37...46 mm , e.g. -Kukko 21/6-
- ◆ Countersupport e.g. -Kukko 22/2-
- ◆ Dial gauge

The output shaft must be re-set when the following components are replaced:

- ◆ Output shaft
- ◆ Clutch housing



or

- ◆ Tapered-roller bearing

Setting overview ⇒ [page 159](#) .

Note

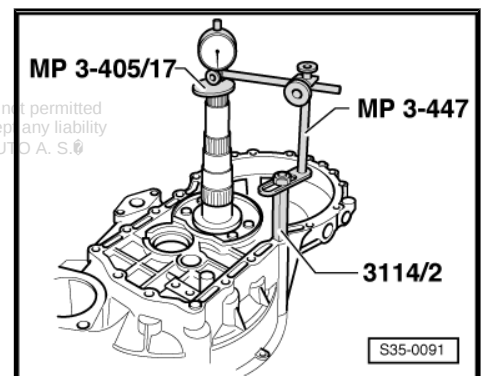
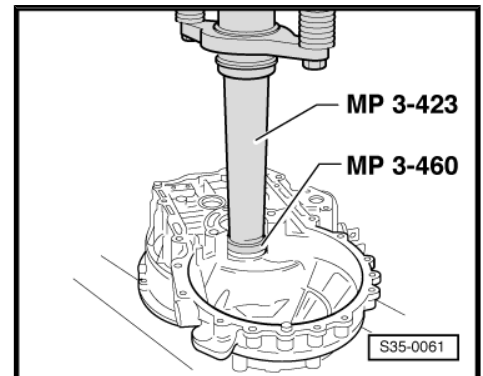
Sealing surfaces of clutch and gearbox housing must be removed of sealant residues.

- Press in outer ring/tapered-roller bearing small in the clutch housing with a 0.65 mm thick adjusting washer up to the stop
- Insert output shaft and tighten nuts for the bearing support to tightening torque ⇒ [page 128](#) .
- Turn output shaft 20 to 30 times in one direction.

Note

- ◆ *Therefore, it must be turned in one direction so that the rolling elements of the tapered-roller bearing settle in one direction.*
- ◆ *This requires 20 to 30 turns.*
- ◆ *Otherwise the alignment result will be distorted.*

- Insert dial gauge (3 mm measuring range) and set to "0" with a 1 mm bias.
- Move the output shaft up and down, read off and write down the clearance on the dial gauge. (Example: 0.20 mm)



2.2.1 Determine thickness of the adjusting washer

The prescribed bearing preload is reached by adding the established measured value (in the example 0.20 mm) to the inserted adjusting washer (0.65 mm) and by adding a constant compression value (0.10...0.15 mm).

Example:

inserted washer	0.65 mm
+ measured value	0.20 mm
+ pressure (const. value)	0.15 mm
Thickness of the adjusting washer	1.00 mm

Example:

Bearing clearance = (adjusting washer 0.65 mm and determined measured value)	Thickness of the adjusting washer according to the table
0.850 mm	1.000 mm

- Remove output shaft and pull out small outer ring/tapered-roller bearing.

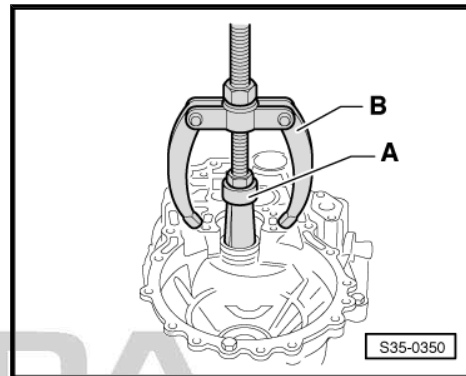
-A- - interior extractor 37...46 mm , e.g. -Kukko 21/6-

-B- countersupport , e.g. -Kukko 22/2-

The following adjusting washers are available:

Adjusting washer table

Bearing clearance = (adjusting washer 0.65 mm and determined measured value)	Adjusting washer thickness (mm)
0,650	0,750
0,660 ...0,689	0,800
0,690 ...0,739	0,850
0,740 ...0,789	0,900
0,790 ...0,839	0,950
0,840 ...0,889	1,000
0,890 ...0,939	1,050
0,940 ...0,989	1,100
0,990 ...1,039	1,150
1,040 ...1,089	1,200
1,090 ...1,139	1,250
1,140 ...1,189	1,300
1,190 ...1,239	1,350
1,240 ...1,289	1,400
1,290 ...1,339	1,450
1,340 ...1,389	1,500
1,390 ...1,429	1,550



Note

Assign the adjusting washers via the ➤ *Electronic Catalogue of Original Parts* .

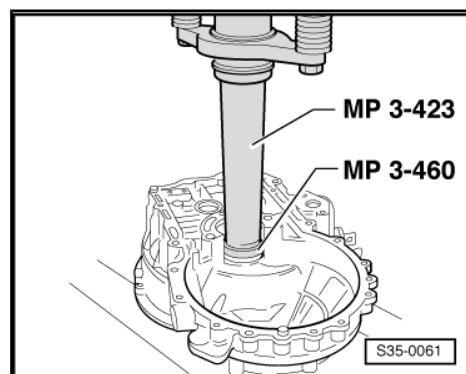
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- Insert adjusting washers of the determined thickness, the thickest adjusting washer first.
- If the previous adjusting washer 0.65 mm should be inserted again, it must be checked for damage.

If the measured washer thickness is greater than the one listed in the table, 2 washers corresponding to the measured value may be fitted.

Different tolerances allow to select the required thickness for each washer very precisely.

- Press in small outer ring/tapered-roller bearing with the determined adjusting washer (in the example: 1.00 mm).
- Install output shaft and tighten nuts for the bearing support in the clutch housing to tightening torque ➤ [page 128](#) .



3 Reverse shaft

3.1 Disassembling and assembling the reverse shaft

Special tools and workshop equipment required

- ◆ Pressure plate -MP3-406 (VW 401)-
- ◆ Thrust piece -MP3-411 (VW 454) -
- ◆ Pressure spindle -MP3-423 (VW 407)-
- ◆ Pressure spindle -MP3-448 (VW 408 A)-
- ◆ Pressure washer -MP3-455 (VW 447 H)-
- ◆ Centering mandrel -MP3-463 (12-551)-
- ◆ Pressure spindle -MP6-405 (VW 411)-
- ◆ Interior extractor 14,5...18.5 mm , e.g. -Kukko 21/2-
- ◆ Countersupport e.g. -Kukko 22/1-



Note

*Always replace the needle bushing from the clutch housing or from the reverse shaft support after disassembling
⇒ Electronic Catalogue of Original Parts .*

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1 - Clutch housing

2 - Needle bushing

- ☐ removing ⇒ [page 142](#)
- ☐ installing ⇒ [page 143](#)
- ☐ always replace after removing ⇒ Electronic Catalogue of Original Parts

3 - Reverse pinion

4 - Circlip

- ☐ always replace after removing ⇒ Electronic Catalogue of Original Parts
- ☐ carefully insert new circlip
- ☐ do not over-extend

5 - Reverse gear sliding gear

- ☐ remove circlip Pos. 4 before replacing
- ☐ collar points to reverse gear pinion

6 - Reverse shaft

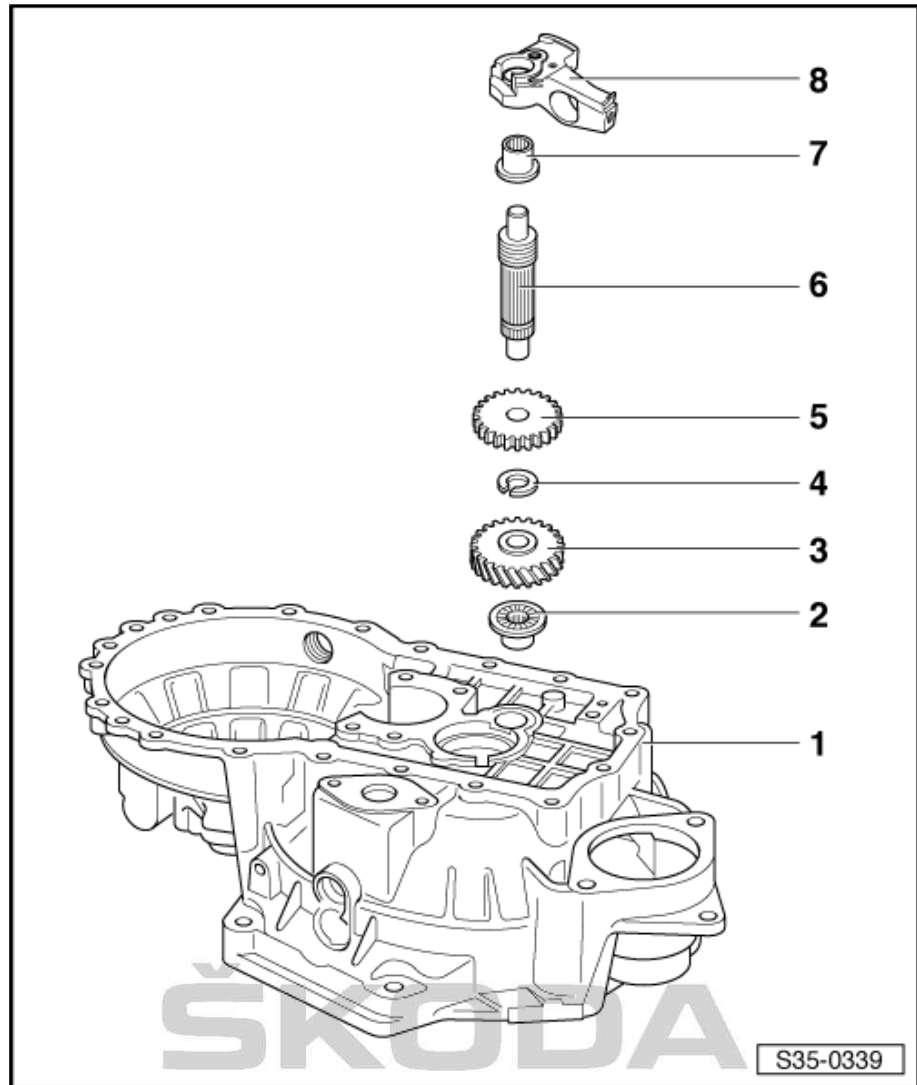
- ☐ removing and installing ⇒ [page 94](#)

7 - Needle bushing

- ☐ pressing out ⇒ [page 143](#)
- ☐ installing ⇒ [page 143](#)
- ☐ always replace after removing ⇒ Electronic Catalogue of Original Parts

8 - reverse shaft support

- ☐ removing and installing ⇒ [page 94](#)



Removing needle bushing from clutch housing

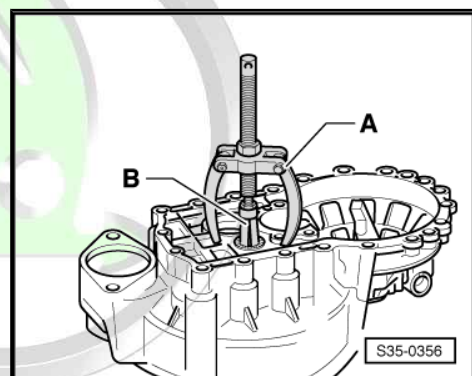
A - Countersupport , e.g. -Kukko 22/1-

B - Interior extractor 14.5...18.5 mm , e.g. -Kukko 21/2-



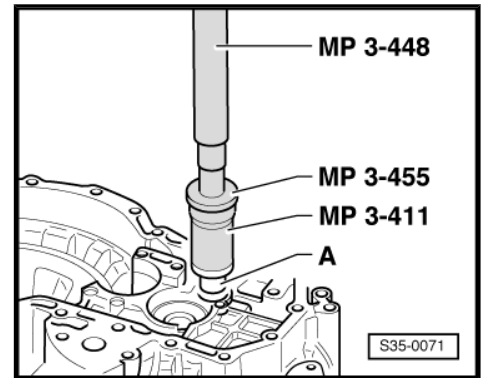
Note

The needle bushing is damaged when removed and must be replaced ⇒ Electronic Catalogue of Original Parts .

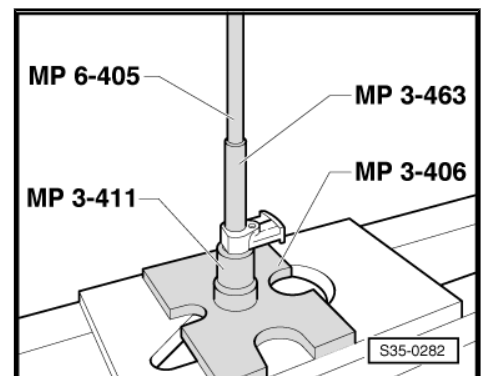




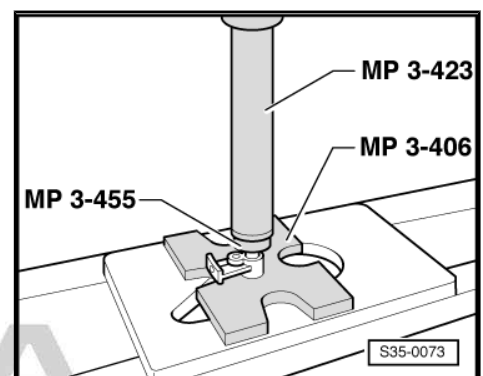
Pressing in needle bushing -A- in the clutch housing



Pressing out needle bushing from the reverse shaft support



Pressing the needle bushing in the reverse shaft support



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39 – Final drive, differential gear

1 Replacing gasket rings for flange shafts with gearbox installed

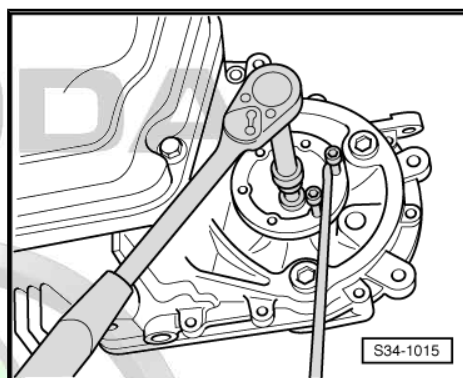
1.1 Replacing the left flange shaft gasket ring

Special tools and workshop equipment required

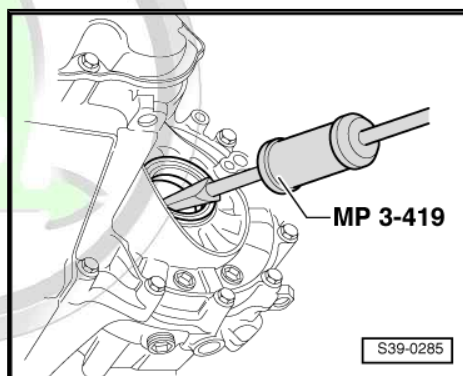
- ◆ Multi-purpose tool -MP3-419 (VW 771)-
- ◆ Thrust piece -T10160-
- ◆ Catch pan
- ◆ Sealing grease -G 052 128 A1-

1.1.1 Removing

- Remove front left wheel ⇒ Chassis ⇒ Rep. Gr. 44 and raise vehicle.
- Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .
- Remove the front left wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .
- Turn steering to full left lock.
- Unscrew the drive shaft from the flange shaft ⇒ Chassis ⇒ Rep. Gr. 40 .
- Tie up the drive shaft as far as possible. Avoid damaging the paintwork on the drive shaft during this operation.
- Position the catch pan under the gearbox.
- Unscrew the fixing screw for the flange shaft, to this end insert two screws in the flange and using a tyre iron hold the shaft.
- Remove the flange shaft with pressure spring.



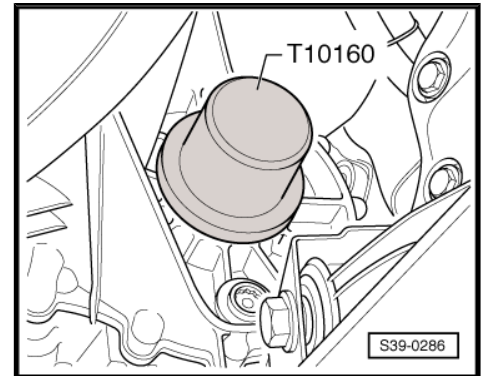
- Pull out seal ring for flange shaft with Multi-purpose tool -MP3-419 (VW 771)- .





1.1.2 Install

- Drive the new seal ring in up to the stop, do not twist the seal ring.
- Fill half the space between the sealing lips and dust lips with sealing grease -G 052 128 A1- .
- Insert the flange shaft.
- Secure the flange shaft with the conical screw and tighten with tightening torque.
- Install drive shafts on gearbox ⇒ Chassis ⇒ Rep. Gr. 40 .
- Inspecting gear oil ⇒ [page 81](#) .
- Install the front left wheelhouse liner ⇒ Body Work ⇒ Rep. Gr. 66 .
- Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .
- Install wheel ⇒ Chassis ⇒ Rep. Gr. 44 .



Tightening torque

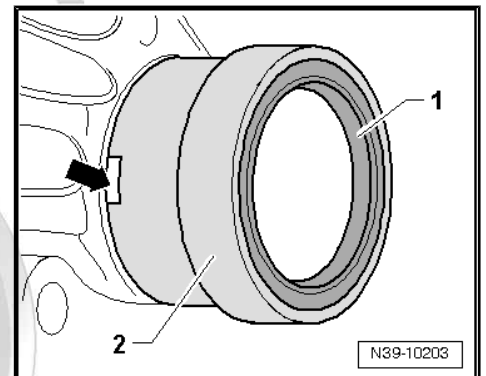
Flange shaft on gearbox (conical screw)	⇒ page 87
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1.2 Difference between the gasket rings with right flange

Gasket ring -1- with right flange is located in the bushing -2- and is available in different versions.

Gasket ring -1- and bushing -2- in separated version
⇒ [page 145](#) : Recesses are present on the circumference of the bushing -arrow-.

Gasket ring -1- and bushing -2- in separated version
⇒ [page 147](#) : No recesses are present on the circumference of the bushing.



1.3 Replace gasket ring in separated version for right flange shaft

Special tools and workshop equipment required

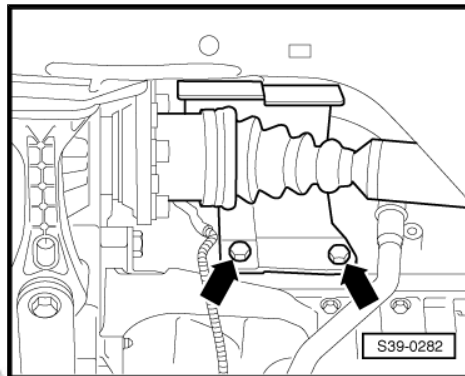
- ◆ Assembly device -MP6-414 (3253)-
- ◆ Thrust piece -T10160-
- ◆ Catch pan
- ◆ Sealing grease -G 052 128 A1-

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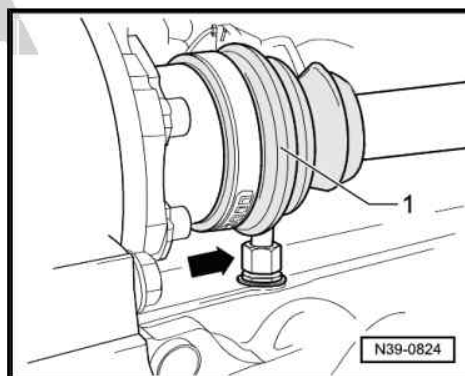
1.3.1 Removing

- Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .
- Turn steering to full right lock.

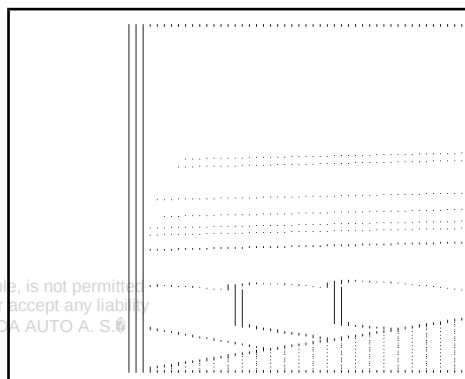
- If applicable remove cap for drive shaft from the engine.



- Unscrew the drive shaft -1- from the flange shaft ➔ Chassis ➔ Rep. Gr. 40 .
- Tie up the drive shaft as far as possible. Avoid damaging the paintwork on the drive shaft during this operation.
- Position the catch pan under the gearbox and the engine.
- If necessary, unscrew oil return-flow line for exhaust turbo-charger from engine -arrow- ➔ Engine ➔ Rep. Gr. 21 .



- Unscrew the fixing screw for the flange shaft, to this end insert two screws in the flange and using a tyre iron hold the shaft.
- Remove the flange shaft with pressure spring.



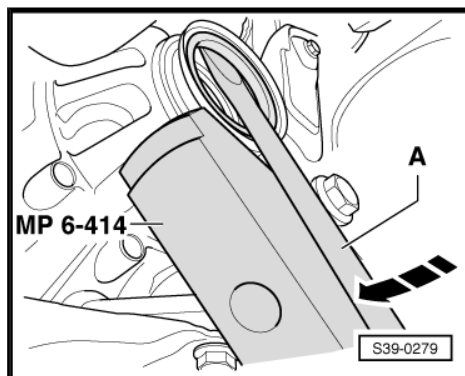
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- Lever out gasket ring using a screwdriver -A-, to do so support the screwdriver on a suitable base (e. g. assembly device - MP6-414 (3253)-)



Note

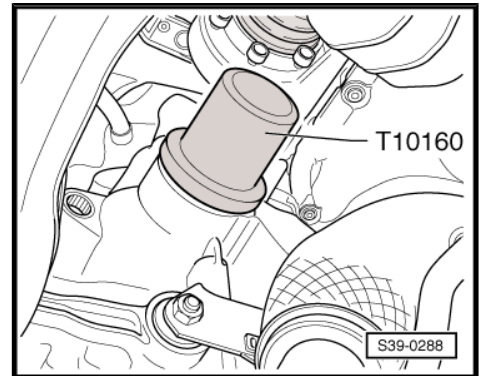
- ♦ Do not damage the bushing as this will cause leaks.
- ♦ replace bushing if damaged ➔ [page 106](#) .



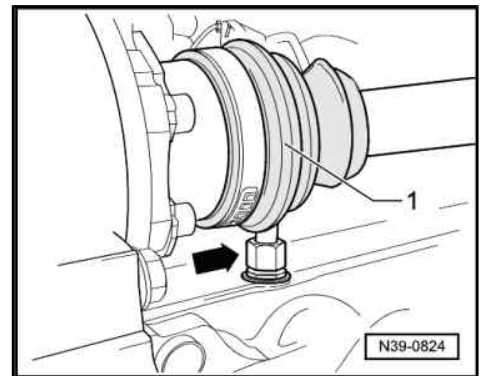


1.3.2 Install

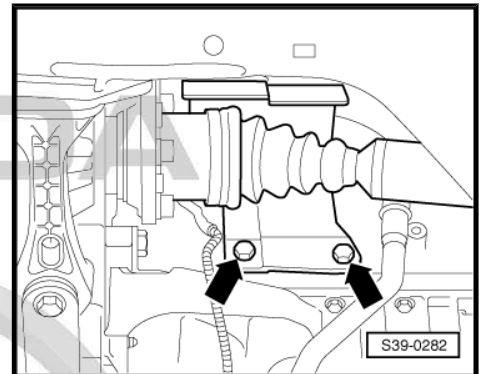
- Drive the new seal ring in up to the stop, do not twist the seal ring.
- Fill half the space between the sealing lips and dust lips with sealing grease -G 052 128 A1- .
- Insert the flange shaft.
- Secure the flange shaft with the conical screw and tighten with tightening torque.



- If the oil return-flow line for exhaust turbocharger was unscrewed at the engine, now install it again -arrow- ⇒ Engine ⇒ Rep. Gr. 21 .
- Install drive shaft -1- on gearbox ⇒ Chassis ⇒ Rep. Gr. 40 .



- If necessary screw on cap for drive shaft.
- Check gear oil level ⇒ [page 81](#) .
- Install the noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .



Tightening torque

Flange shaft on gearbox (conical screw)	⇒ page 88
Protective cap drive shaft on engine	⇒ page 79

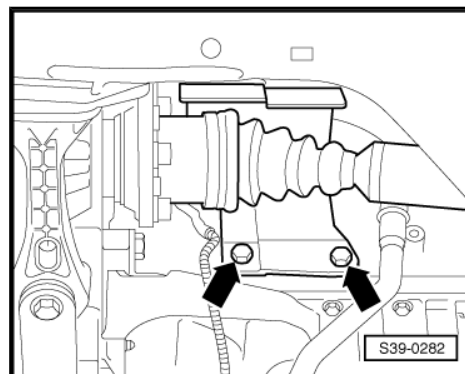
1.4 Replace gasket ring in single version (together with bushing) for right flange shaft

Special tools and workshop equipment required

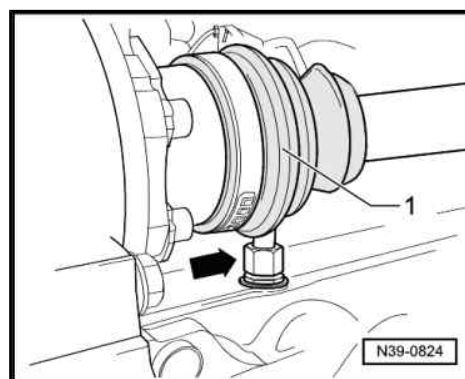
- ◆ Multi-purpose tool -MP3-419 (VW 771)-
- ◆ Assembly device -MP3-434 (3066)-
- ◆ Thrust piece -T10148-
- ◆ Catch pan
- ◆ Sealing grease -G 052 128 A1-

1.4.1 Removing

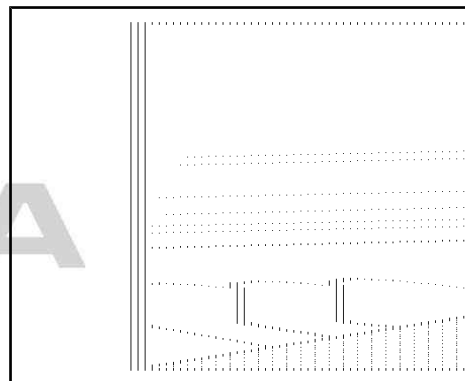
- Remove noise insulation ⇒ Body Work ⇒ Rep. Gr. 50 .
- Turn steering to full right lock.
- If applicable remove cap for drive shaft from the engine.



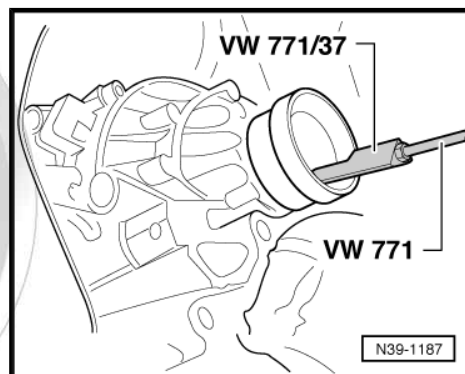
- Unscrew the drive shaft -1- from the flange shaft ⇒ Chassis ⇒ Rep. Gr. 40 .
- Tie up the drive shaft as far as possible. Avoid damaging the paintwork on the drive shaft during this operation.
- Position the catch pan under the gearbox and the engine.
- If necessary, unscrew oil return-flow line for exhaust turbo-charger from engine -arrow- ⇒ Engine ⇒ Rep. Gr. 21 .



- Unscrew the fixing screw for the flange shaft, to this end insert two screws in the flange and using a tyre iron hold the shaft.
- Remove the flange shaft together with the pressure spring.



- Pull out gasket ring with bushing.
- A collar is located in the inner diameter of the bushing.
- Position the extractor -VW 771/37 (MP3-419/37) - directly behind the collar in the bushing.
 - Press the extractor -VW 771/37 (MP3-419/37)- firmly against the bushing when pulling it out.



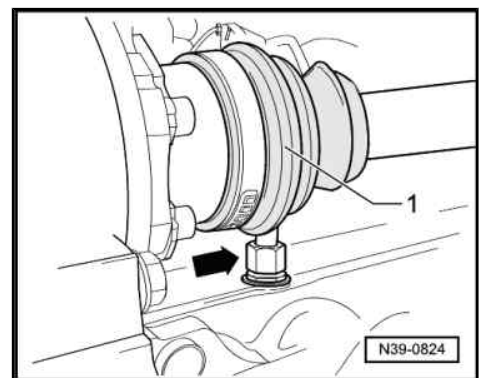
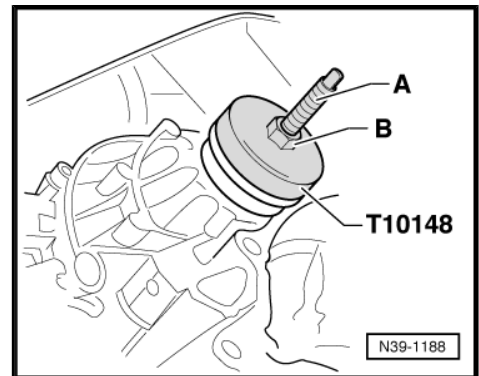
1.4.2 Install

- Pressing on together bushing and gasket ring.

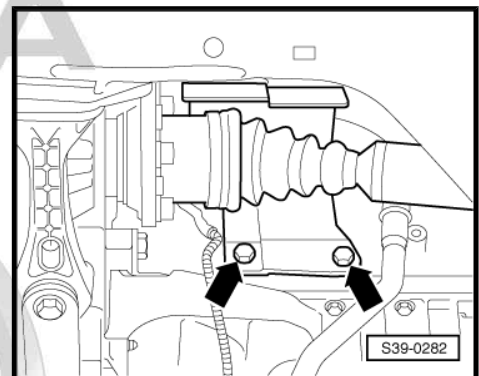
A - Screw threaded rod from assembly device - MP3-434 (3066)- into the threaded part of the differential gear.

B - Nut M12 with washer

- By turning the nut -B- install the bushing over the pressure plate -T10148- up to the stop.
- Fill half the space between the sealing lips and dust lips with sealing grease -G 052 128 A1- .
- Insert the flange shaft.
- Secure the flange shaft with the conical screw and tighten with tightening torque.
- If the oil return-flow line for exhaust turbocharger was unscrewed at the engine, now install it again -arrow- ➔ Engine ➔ Rep. Gr. 21 .
- Install drive shaft -1- on gearbox ➔ Chassis ➔ Rep. Gr. 40 .



- If necessary screw on cap for drive shaft.
- Check gear oil level ➔ [page 81](#) .
- Install the noise insulation ➔ Body Work ➔ Rep. Gr. 50 .



Tightening torque

Flange shaft on gearbox (conical screw)	➔ page 88
Protective cap drive shaft on engine	➔ page 79

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2 Differential gear

2.1 Disassembling and assembling differential gear

Special tools and workshop equipment required

- ◆ Counterholder -MP1-223 (3067)-
- ◆ Pressure plate -MP3-406 (VW 401)-
- ◆ Pressure plate -MP3-407 (VW 402)-
- ◆ Pressure spindle -MP3-408 (VW 412)-
- ◆ Pipe section -MP3-409 (VW 418 A)-
- ◆ Drive bushing -MP3-427 (40-21)-
- ◆ Pressure spindle -MP3-448 (VW 408 A)-
- ◆ Thrust piece -MP3-459 (VW 473) -
- ◆ Thrust plate -MP3-464 (30-205)-
- ◆ Thrust piece -MP3-467 (40-105)-
- ◆ Thrust piece -MP3-468 (2007)-
- ◆ Bushing -MP3-474 (3144)-
- ◆ Tapered-roller bearing extractor -V.A.G 1582-
- ◆ Gripper -V.A.G 1582/3-
- ◆ Interior extractor 46...58 mm , e.g. -Kukko 21/7-
- ◆ Countersupport e.g. -Kukko 22/2-



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Note

- ◆ *Before installing heat the inner ring of the tapered-roller bearing to 100°C.*
- ◆ *Replace both tapered-roller bearings together.*
- ◆ *When replacing the tapered-roller bearings, the differential housing, the gearbox housing or the clutch housing, set the differential gear ⇒ [page 156](#).*

1 - Gearbox housing

2 - Adjusting washer

- ☐ for the differential gear
- ☐ Determine thickness
⇒ [page 156](#)

3 - Outer ring/tapered-roller bearing

- ☐ removing ⇒ [page 153](#)
- ☐ installing ⇒ [page 154](#)

4 - Inner ring/tapered-roller bearing

- ☐ remove ⇒ [page 153](#)
- ☐ pressing on
⇒ [page 153](#)

5 - Differential gear housing

- ☐ with gear pinion for final drive
- ☐ Differential gear housing adapted to the stop disc compound
⇒ [page 155](#)

6 - Inner ring/tapered-roller bearing

- ☐ remove ⇒ [page 153](#)
- ☐ pressing on
⇒ [page 153](#)

7 - Outer ring/tapered-roller bearing

- ☐ pressing out
⇒ [page 152](#)
- ☐ installing ⇒ [page 153](#)

8 - Clutch housing

9 - Bushing

- ☐ for support of gasket ring Pos. 10
- ☐ removing and installing ⇒ [page 106](#)

10 - Sealing ring

- ☐ left - replace with installed gearbox ⇒ [page 144](#)
- ☐ right - replace with installed gearbox ⇒ [page 145](#)

11 - Gasket ring and bushing as one component.

- ☐ replace ⇒ [page 147](#) gasket ring and bushing together in the event of damage
- ☐ Difference ⇒ [page 145](#)

12 - 25 Nm

- ☐ screw to threaded connector Pos. 20 to attach the flange shaft

13 - Flange shaft

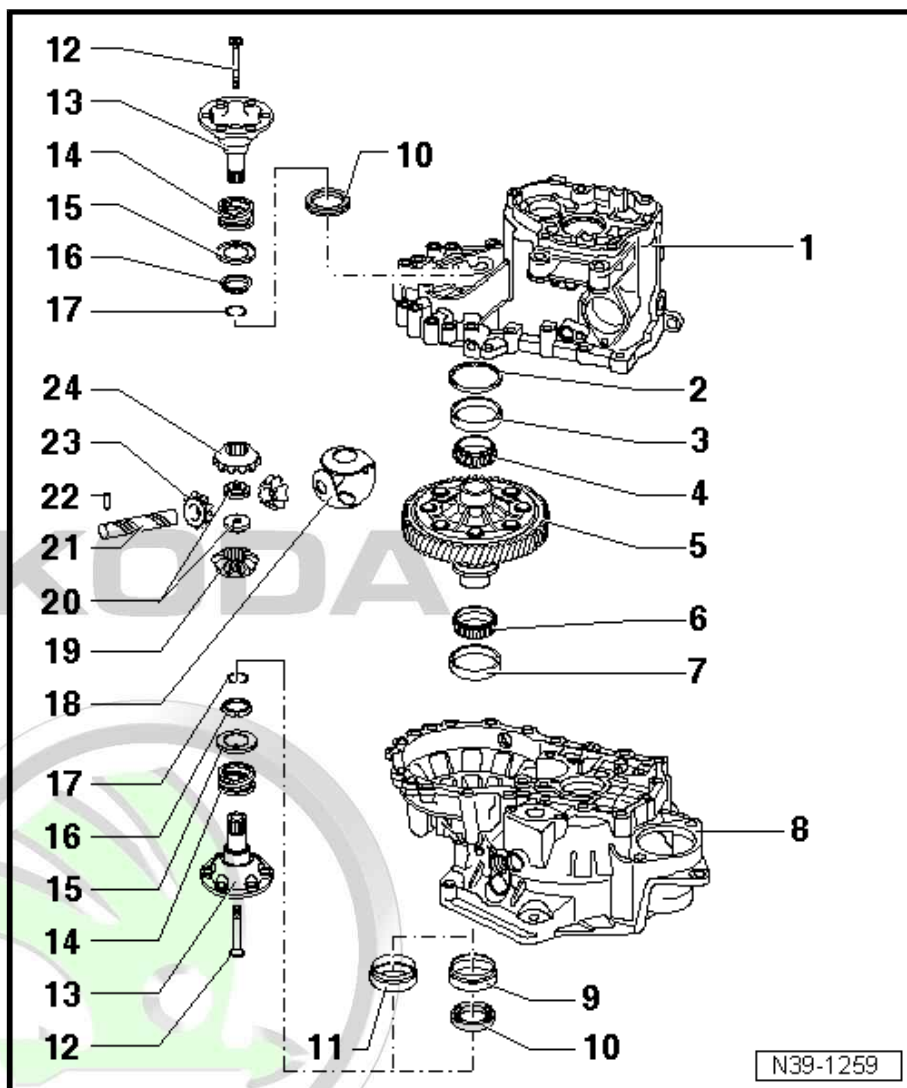
- ☐ removing and installing ⇒ [page 144](#)

14 - Pressure spring for flange shaft

- ☐ fitted behind flange shafts

15 - Thrust washer

- ☐ Fitting position ⇒ [page 156](#)





16 - Conical ring

- ☐ with slots for thrust washer catch
- ☐ Fitting position: Cone towards differential gear housing

17 - Circlip

- ☐ holds the conical ring, stop disc and pressure spring in position when the flange shaft is removed

18 - Stop disc compound

- ☐ insert with gear oil
- ☐ on certain gearboxes the stop disc compound was provided with lands ⇒ [page 155](#)

19 - large differential bevel gear

- ☐ installing ⇒ [page 156](#)

20 - Threaded part

- ☐ installing ⇒ [page 156](#)

21 - Differential bevel gear shaft

- ☐ drive out with drift
- ☐ remove together with short tensioning sleeve ⇒ [page 155](#)
- ☐ remove together with long tensioning sleeve ⇒ [page 155](#)
- ☐ installing ⇒ [page 156](#)

22 - Tensioning sleeve

- ☐ to secure the axle for differential bevel gear
- ☐ Difference between the tensioning sleeves ⇒ [page 154](#)
- ☐ short tensioning sleeve; removing and installing ⇒ [page 155](#)
- ☐ long tensioning sleeve; removing ⇒ [page 155](#)
- ☐ long tensioning sleeve; installing ⇒ [page 155](#)

23 - small differential bevel gear

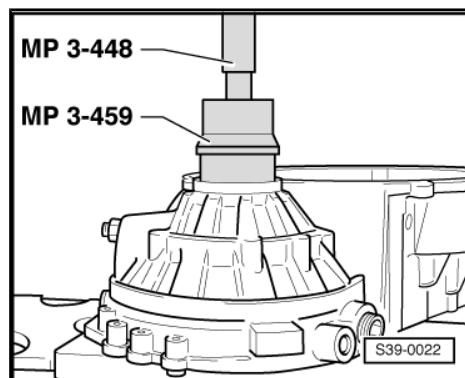
- ☐ installing ⇒ [page 156](#)

24 - large differential bevel gear

- ☐ installing ⇒ [page 156](#)

Press outer ring/tapered-roller bearing out of clutch housing

- First remove support bushing for sealing ring/flange shaft.





Press outer ring/tapered-roller bearing into the clutch housing
No adjusting washer is fitted at the side of the clutch housing.

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Remove inner rings/tapered-roller bearing

- Before fitting the extractor, position pressure plate -MP3-467 (40-105) - on the differential gear housing.



Note

Both inner rings/tapered-roller bearings of the differential gear housing are removed in the same way.

Press on inner rings/tapered-roller bearing



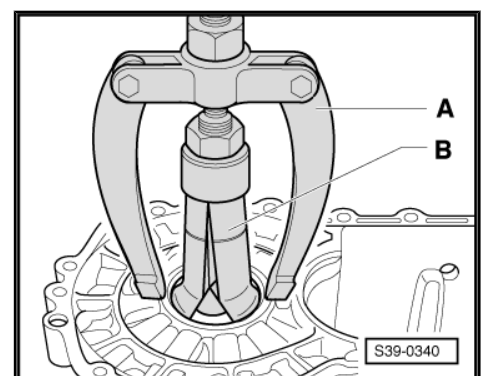
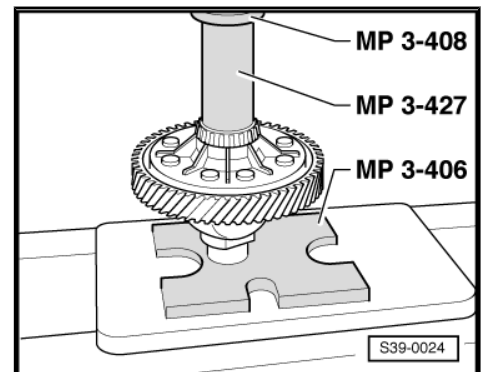
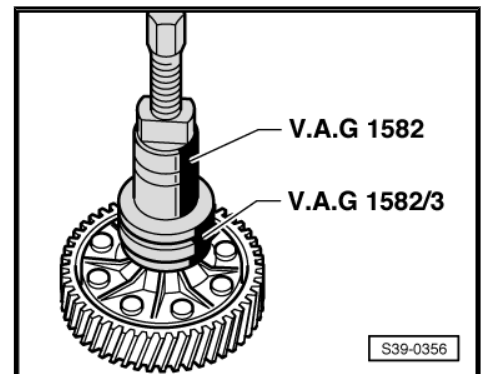
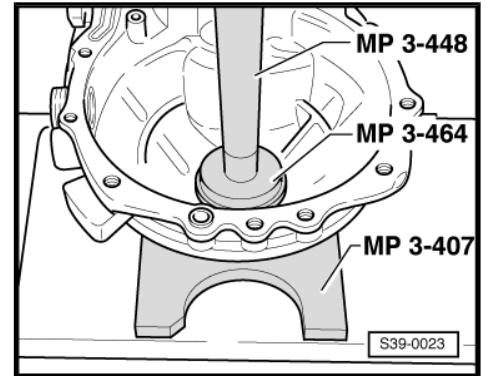
Note

The inner ring and tapered-roller bearing for the gearbox housing and clutch housing are pressed on with the same special tools.

Remove outer ring/tapered-roller bearing from gearbox housing

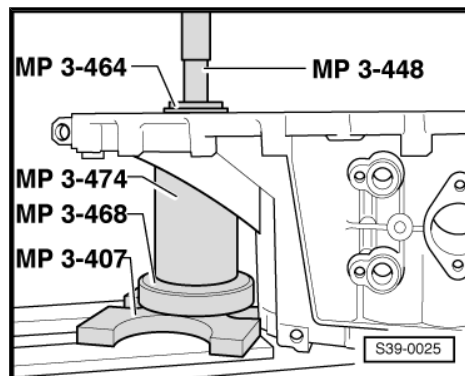
A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 46...58 mm , e.g. -Kukko 21/7-

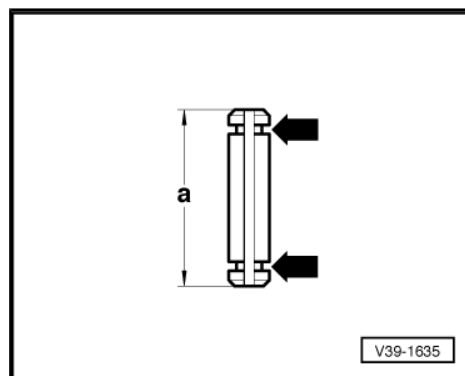


Press in outer ring/tapered-roller bearing in the gearbox housing

- Position adjusting washer under outside ring.
- Support the gearbox housing with a bushing -MP3-474 (3144)- directly below the bearing support.



Difference between the tensioning sleeves

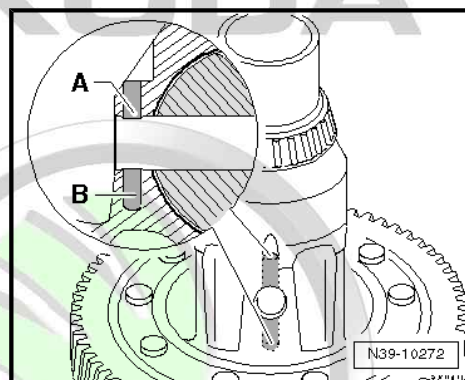


Dimension "a" mm	Distinguishing feature
28.5 (short tensioning sleeve) removing and installing ⇒ page 155	with round slot -arrows-
36.0 (long tensioning sleeve) removing ⇒ page 155 installing ⇒ page 155	without round slot

Assign differential gear housing

The hole in the differential gear housing was adapted due to the longer tensioning sleeve.

- Check the hole for the tensioning sleeve in the differential gear housing.



Bore	Length of tensioning sleeve (mm)
"A"	28.5 (short tensioning sleeve)
"A" and "B"	36.0 (long tensioning sleeve)

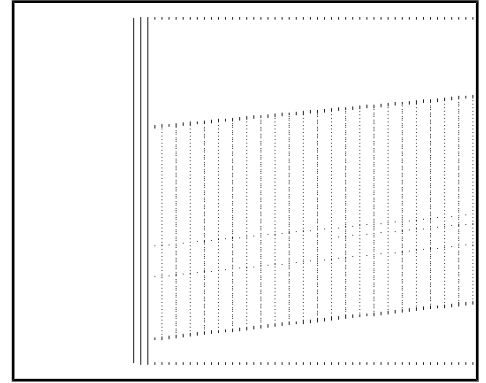
Remove and install the short tensioning sleeve (with round slot) for the differential bevel gear shaft

Removing

- Cover inner ring/tapered-roller bearing to avoid any possible damage and swarf.
- Drive out tensioning sleeve with a chisel, position the chisel in the circular slot.

Install

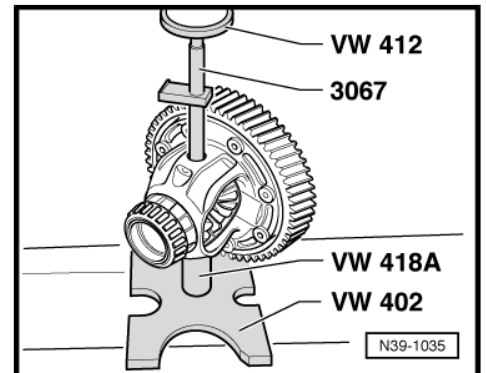
- Drive into the differential gear housing up to the stop.



Remove the long tensioning sleeve (without round slot) and press off the differential bevel gear shaft

The tensioning sleeve is sheared off when pressing out.

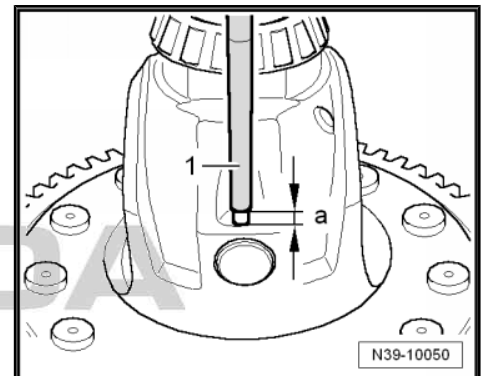
- Drive the remaining part of the tensioning sleeve out of the differential gear housing



Install long tensioning sleeve (without round slot)

- Adjust the hole in the differential bevel gear shaft at the hole in the differential gear housing.
- Drive in the new tensioning sleeve to the dimension -a- = 3.0 mm.

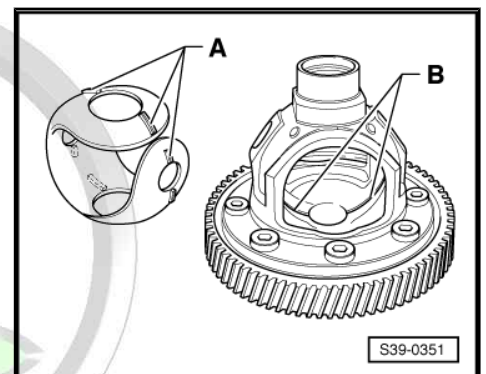
The tensioning sleeve must not come in contact with the gearbox when the differential gear housing is installed.



On certain gearboxes the stop disc compound was provided with lands -A- in the area of the openings

These lands grip into the round slot -B- of the differential gear housing.

- Install stop disc compound with gearbox oil.
- Insert the stop disc compound in such a way that the lands lock into the slot -B- in the differential gear housing.

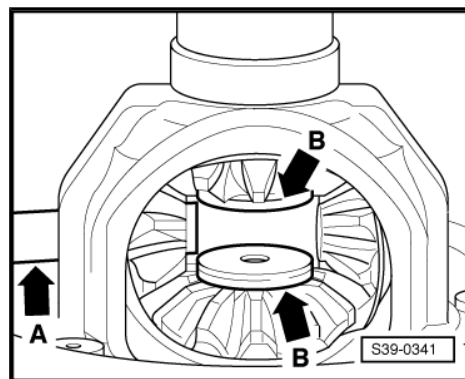


Install differential bevel gear

- Install stop disc compound with gearbox oil.
- Insert both large differential bevel gears and secure (e.g. with flange shaft).
- Insert both small differential bevel gears with a 180° offset.
- Push in the differential bevel gear shaft -arrow A- up to the first small differential bevel gear.
- Insert the threaded parts -arrows B- in the large differential bevel gears.

Fitting position: Shoulder towards differential bevel gear.

- Drive in the differential bevel gear shaft up to end position and secure with tensioning sleeve.

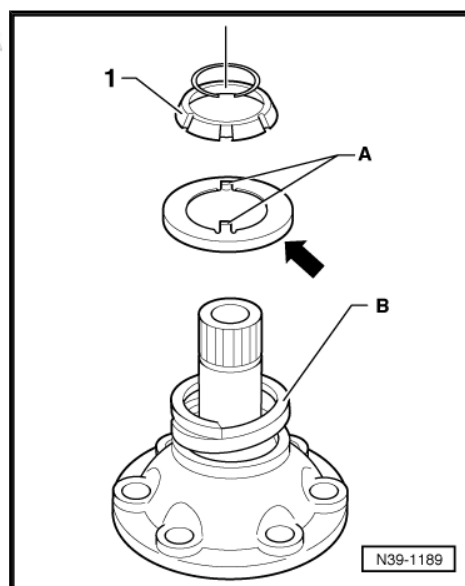


Fitting position of thrust washer for the conical ring -1-

The collar -arrow- points towards the pressure spring -B-.

The lands -A- are available on certain gearboxes.

The lands -A- point towards the conical ring -1-.



2.2 Adjusting the differential gear

Special tools and workshop equipment required

- ◆ Gauge block plate -MP3-405/17-
- ◆ Pressure plate -MP3-407 (VW 402)-
- ◆ Universal dial gauge holder -MP3-447 (VW 387)-
- ◆ Pressure spindle -MP3-448 (VW 408 A)-
- ◆ Thrust plate -MP3-464 (30-205)-
- ◆ Thrust piece -MP3-468 (2007)-
- ◆ Bushing -MP3-474 (3144)-
- ◆ Interior extractor 46...58 mm , e.g. -Kukko 21/7-
- ◆ Countersupport e.g. -Kukko 22/2-
- ◆ Dial gauge

The differential gear must be re-set when the following components are replaced:

- ◆ Gearbox housing
- ◆ Clutch housing
- ◆ Differential gear housing



or

- ◆ Tapered-roller bearings of the differential gear

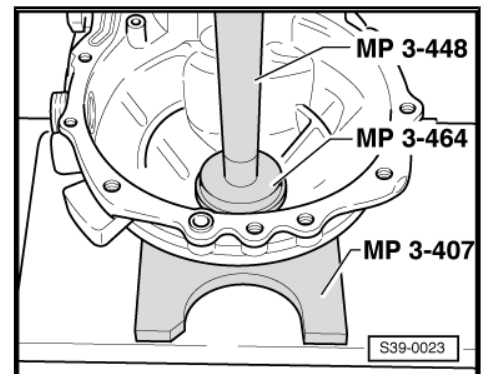
Setting overview ➔ [page 159](#) .

- Press the outer ring/tapered-roller bearing with thrust plate - MP3-464 (30-205) - into the clutch housing.

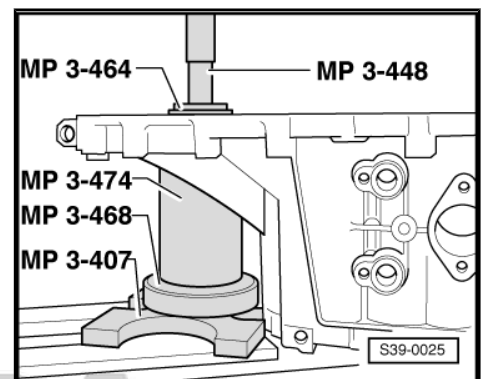


Note

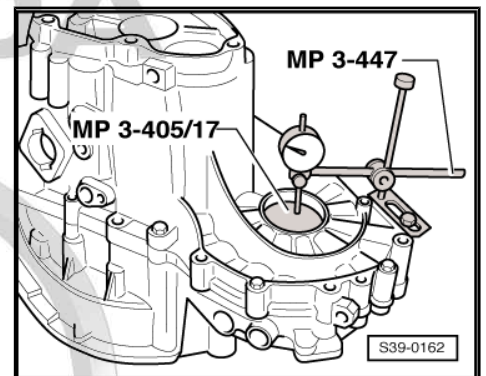
The inner and outer ring of the tapered-roller bearing are paired. Do not interchange!



- Press outer ring/tapered-roller bearing without adjusting washer with thrust plate -MP3-464 (30-205)- into the gearbox housing.
- Insert the differential gear in the clutch housing.
- Position the gearbox housing and tighten 5 screws to torque 25 Nm.



- Set the dial gauge to 0 with 1 mm preload on "0".
- Move the differential gear up and down, read off and write down the clearance on the dial gauge (example: 0.70 mm).



2.2.1 Determine the adjusting washer

The prescribed bearing preload is reached by adding to the established measured value a constant compression value (0,25 mm).

Example:

measured value 0.70 mm
+ pressure (const. value) 0.25 mm

Thickness of the adjusting washer = 0.95 mm

One example of this:

Measured value of bearing play	Thickness of the adjusting washer according to the table
0.70 mm	0.95 mm

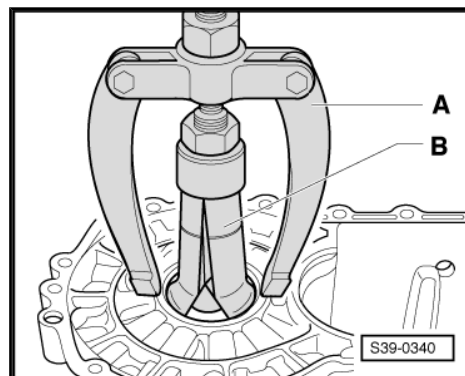
- Remove the gearbox housing and pull the outer ring/tapered-roller bearing out of the gearbox housing.

A - Countersupport , e.g. -Kukko 22/2-

B - Interior extractor 46...58 mm , e.g. -Kukko 21/7-

The following adjusting washers are available:

Bearing clearance	Adjusting washer
Measured value (mm)	Thickness (mm)
0,303...0,449	0,650
0,450...0,499	0,700
0,500...0,549	0,750
0,550...0,599	0,800
0,600...0,649	0,850
0,650...0,699	0,900
0,700...0,749	0,950
0,750...0,799	1,000
0,800...0,849	1,050
0,850...0,899	1,100
0,900...0,949	1,150
0,950...0,999	1,200
1,000...1,049	1,250
1,050...1,099	1,300
1,100...1,149	1,350
1,150...1,199	1,400



Note

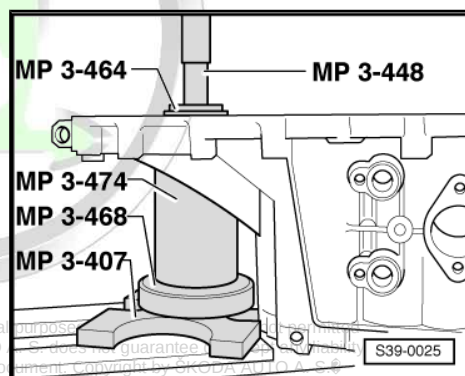
Assign the adjusting washers via the ➔ *Electronic Catalogue of Original Parts* .

- Insert adjusting washer of the determined thickness, the thickest first.

If the measured washer thickness is greater than the one listed in the table, 2 washers corresponding to the measured value may be fitted.

Different tolerances allow to measure the required thickness for each washer very precisely.

- Press outer ring/tapered-roller bearing with the determined adjusting washer (in the example 0.95 mm) again into the gearbox housing.
- Fit gearbox housing and tighten ➔ [page 87](#) .



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3 Setting overview



Note

- ◆ *When working on the gearbox it is only necessary to re-set the drive shaft, output shaft or differential gear if parts were replaced that directly affect the setting of the gearbox.*
- ◆ *To avoid unnecessary settings, refer to the following table:*

		Drive shaft ⇒ page 117	Set: Output shaft ⇒ page 128	Differential gear ⇒ page 150
Replaced part:	Gearbox housing	x		x
	Clutch housing	x	x	x
	Drive shaft	x		
	Output shaft		x	
	Differential gear housing			x
	Tapered-roller bearing for drive shaft	x		
	Tapered-roller bearing for output shaft		x	
	Tapered-roller bearings for differential gears.			x
	4th gear pinion	x		

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